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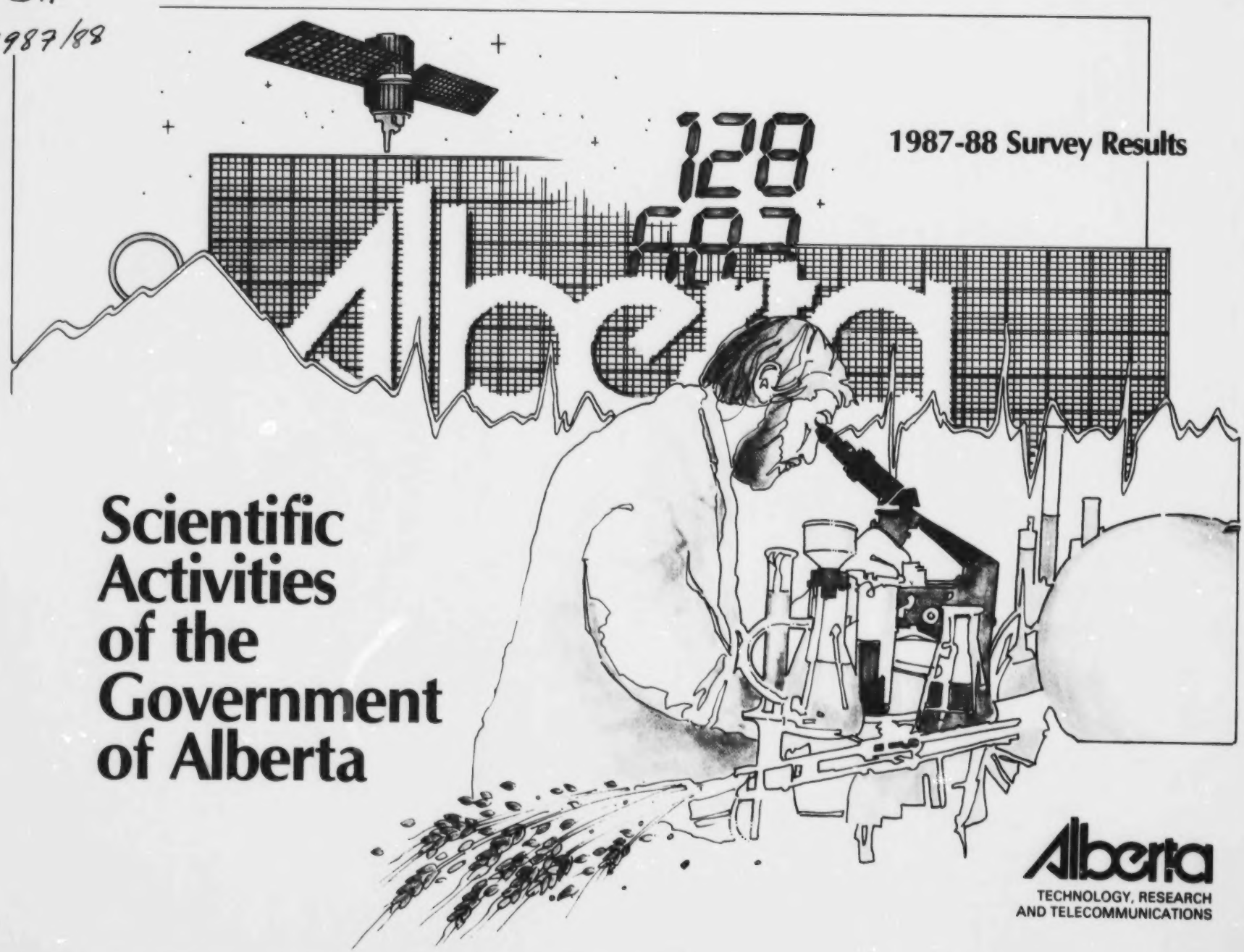

1987-88 Survey Results

Scientific Activities of the Government of Alberta

Alberta
TECHNOLOGY, RESEARCH
AND TELECOMMUNICATIONS

Scientific Activities of the Government of Alberta

1987-88 Survey Results

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FOREWORD

This report results from the fifteenth annual survey of scientific activities of the Government of Alberta conducted in June of 1988 by Rose Krakower of the Science, Technology and Capital Stock Division of Statistics Canada with the co-operation and assistance of Jan Speirs, Technology, Research and Telecommunications and Esther Giesinger of the Alberta Bureau of Statistics

The first surveys of government scientific activities at the provincial level were conducted in the provinces of Ontario, Alberta and Nova Scotia in 1974; Saskatchewan was included in 1975, British Columbia in 1977. Nova Scotia dropped out of the survey in 1977 due to lack of science policy user groups within the province. In 1984 New Brunswick carried out its first survey, including only natural science activities. Manitoba joined in 1985 and Newfoundland in 1986. Nova Scotia renewed its participation in 1988. Reports for other provinces, similar to this one are available on request from the representatives identified at the end of this report.

Science surveys, like many other surveys, are based on the respondents' interpretation of definitions and methods of calculation. Accounting records, which use a science-based classification are rarely used. Notwithstanding that the data are estimates, they are a good representation of current science expenditures and manpower utilization for the province.

Surveys of the scientific activities of provincial governments serve several purposes. They provide an essential data base for analysis and the formulation of provincial science policy. They also provide data for the development of a national aggregate R&D series. National aggregates are published by Statistics Canada in **Science and Technology Indicators**, (Catalogue No. 88-201) and **Resources for Research and Development in Canada**, (Catalogue No. 88-203). Many of the science publications are listed at the end of this report. The national aggregates are also needed to complete the international questionnaires for the Organization for Economic Cooperation and Development (OECD) and the United Nations Education, Science and Culture Organization (UNESCO).

This is the first year that person-years and associated costs devoted to the administration of extramural programs (AEP) are being shown separately. These data have in previous years been included with the intramural activities of the individual departments.

The 1987-88 survey has produced reasonable indicators of scientific involvement of the Alberta government at the department or agency level. This success is largely due to the goodwill and efforts of officials of the responding departments. The assistance provided by the Alberta Bureau of Statistics and Alberta Technology, Research and Telecommunications is gratefully acknowledged and appreciated by Statistics Canada.

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	Table	Page	Table	Page	Table	Page
Historical Series:						
Total Expenditures:						
by Activity	1	18	23	46	45	74
by Department	2	19	24	47	46	75
by Performer	3	20	25	48	47	76
Total Expenditures on R&D:						
by Performer	4	20	26	48	48	76
by Department	5	21	27	49	49	77
Departmental Personnel Engaged in Science Activities	6	22	28	50	50	78
Expenditures in 1987-88 Fiscal Year:						
Total Expenditures:						
by Sources of Funds	7	23	29	51	51	79
by Activity and Performer	8	24	30	52	52	80
by Department and Performer	9	25	31	53	53	81
by Department and Activity	10	26	32	54	54	82
Total Expenditures on R&D by Department and Performer	11	27	33	55	55	83
Intramural Expenditures by Department and Type of Expenditure	12	28	34	56	56	84
Departmental Personnel Engaged in Science Activities	13	29	35	57	57	85
Objectives of Expenditures:						
by Department	14	31	36	59	58	87
by Activity	15	34	37	62	59	90

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Statistical Tables

	All Sciences		Natural Sciences		Social Sciences and Humanities	
	Table	Page	Table	Page	Table	Page
Estimates for 1988-89 Fiscal Year:						
Total Expenditures:						
by Activity and Performer	16	35	38	63	60	91
by Department and Performer	17	36	39	64	61	92
by Department and Activity	18	37	40	65	62	93
Total Expenditures on R&D by Department and Performer	19	38	41	66	63	94
Departmental Personnel Engaged in Science Activities	20	39	42	67	64	95
Objectives of Expenditures:						
by Department	21	41	43	69	65	97
by Activity	22	44	44	72	66	100

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The following symbols are used in this report:

- \- nil or zero
- (e) estimated by Statistics Canada
- (r) revised figures
- ... figures not available or not applicable
- -- too small to be expressed

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HIGHLIGHTS

In the 1987-88 fiscal year the Government of Alberta spent $243 million or 2.3% of total budgetary expenditures on science activities. While total government expenditures for 1988-89 are estimated to increase by 0.7%, scientific expenditures are expected to decrease by 6.5%. The major spenders are shown in Figure II.

Figure I Total Expenditures on Scientific Activities by Science Type, 1981-82 to 1988-89

Year	Natural sciences			Social sciences			Total		
	R&D	RSA	Total	R&D	RSA	Total	R&D	RSA	Total
	($'000)								
1981-82	105,179	32,298	137,477	2,268	25,643	27,911	107,447	57,941	165,388
1982-83r	136,041	32,949	168,990	1,714	42,124	43,838	137,755	75,073	212,828
1983-84r	152,812	37,215	190,027	2,468	46,373	48,841	155,280	83,588	238,868
1984-85r	184,252	40,401	224,653	2,748	49,313	52,061	187,000	89,714	276,714
1985-86r	175,733	41,820	217,553	3,634	51,191	54,825	179,367	93,011	272,378
1986-87r	245,387	43,605	288,992	6,535	37,900	44,435	251,922	81,505	333,427
1987-88	170,123	41,441	211,564	2,573	28,774	31,347	172,696	70,215	242,911
1988-89e	158,716	35,272	193,988	1,572	31,515	33,087	160,288	66,787	227,075

Revisions to the historical data are due to the inclusion of the Roadway Planning Branch by Department of Transportation & Utilities.

Of the total 1987-88 science expenditures, amounting to $243 million, 87% ($212 million) was for activities in the natural sciences. Total research and development(R&D) expenditures accounted for 71% ($173 million). The proportion of R&D expenditures to total science expenditures in the natural sciences was 80% ($170 million) in contrast with 8% ($3 million) in the social sciences.

The Department of Hospitals and Medical Care which prior to 1987-88 had administered the grants for Applied Heart Disease Research no longer includes these funds in their budget. The programs previously sponsored have stablized and their expenditures, now considered as operating costs are included in the global budgets of their respective hospitals.

Although the budget of the Department of Culture has not changed significantly from last year, there has been a shift away from science activities.

Figure II Total Expenditures on Scientific Activities by Major Department, 1986-87 and 1987-88

Major Department or agency	1986-87	1987-88	Percentage change over 1986-87
	($'000)		%
Agriculture	17,153	17,626	2.8
Culture	19,598	7,433	-62.1
Environment	16,484	14,498	-12.0
Environmental Centre	11,712	11,076	-5.4
Alberta Heritage Foundation for Medical Research	56,930	51,167	-10.1
Hospitals and Medical Care	24,690	4,690	-81.0
AOSTRA	78,917	36,299	-54.0
Sub-total	225,484	142,789	-36.7
Other	107,943	100,122	-7.2
TOTAL	**333,427**	**242,911**	**-27,1**

Figure III shows that current R&D expenditures in the natural sciences were budgeted mainly by 3 departments or agencies. AOSTRA, which in 1986-87 accounted for 32% ($79 million) of these funds, showed a decrease of over 54% in 1988-89.

Figure III Current Expenditures on R&D in the Natural Sciences, 1981-82 to 1988-89

Department or Agency	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Executive Council(1)	15,500	19,148	19,950	21,463	26,209	...	...	...
Alberta Heritage Foundation for Medical Research	12,702	20,659	26,656	31,901	43,007	56,475	50,919	40,603
Hospitals and Medical Care	12,942	16,865	19,769	17,725	21,121	22,080	2,285	2,924
AOSTRA	35,305	41,066	40,586	77,124	52,792	78,905	36,289	39,519
Technology, Research and Telecommunications	...	...	...	...	...	52,854	49,329	45,320
Other	26,801	30,283	34,442	33,643	31,433	34,420	33,352	31,526
TOTAL	**103,250**	**128,021**	**141,403**	**181,856**	**174,562**	**244,734**	**172,174**	**159,893**

(1) Prior to 1987-88 The Alberta Government provided financial assistance to the Alberta Research Council (ARC) under Vote 6. This was administered by the Executive Council. In 1986-87 the Department of Technology, Research and Telecommunications was formed and took over the administration of this transfer of funds to ARC.

In 1987-88, $173 million was allocated to research and development. Slightly more than 65% of this amount was in support of the R&D activities performed in the industry and university sectors. The Departments of Agriculture, Forestry, Lands and Wildlife, Environment and the Environmental Centre were the major R&D performers.

The situation was reversed for related scientific activities (RSA) which was primarily an intramural activity. Approximately 82% of the RSA was performed by three government departments and agencies notably the Departments of Culture, Economic Development and Trade, and Transportation and Utilities.

Figure IV Total Expenditures on Scientific Activities by Sector of Performance, 1987-88

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Natural Sciences:							
R&D	21,144	44,012	66,953	607	31,893	5,514	170,123
RSA	33,967	3,516	643	-	1,139	2,176	41,441
Social Sciences:							
R&D	853	75	1,297	123	48	177	2,573
RSA	23,577	3,085	642	-	5	1,465	28,774
All Sciences:							
R&D	21,997	44,087	68,250	730	31,941	5,691	172,696
RSA	57,544	6,601	1,285	-	1,144	3,641	70,215
TOTAL	**79,541**	**50,688**	**69,535**	**730**	**33,085**	**9,332**	**242,911**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

Of the $51 million of provincial funds allocated to the industrial sector, $44 million (87%) was devoted to R&D. AOSTRA, the major contributor to this sector, accounted for 54% ($24 million) of these funds. AOSTRA, the Alberta Heritage Foundation for Medical Research and the Department of Technology, Research and Telecommunications are the main provincial funders of the university sector. Together they accounted for 89% of the $70 million funded, of which $68 million was devoted to R&D.

The Alberta Research Council received its funds from eleven provincial departments in 1987-88. The largest source was the Department of Technology, Research and Telecommunications for an amount of $26 million.

Figure V Total Expenditures on Scientific Activities by Sector of Performance and Major Department, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(2)	Other	Total
	($'000)						
Agriculture(1)	12,061	798	2,670	-	97	2,467	18,093
Culture	6,740	-	-	-	-	693	7,433
Environment	9,613	3,458	203	-	310	1,006	14,590
Environmental Centre	11,044	-	-	-	-	32	11,076
Forestry, Lands & Wildlife	5,107	812	359	-	337	100	6,715
Alberta Heritage Foundation for Medical Research	1,418	-	46,897	-	-	2,852	51,167
Hospitals & Medical Care	2,338	165	796	679	699	13	4,690
AOSTRA	3,494	23,657	3,659	-	4,815	674	36,299
Technology, Research & Telecommunications	360	13,544	11,617	-	25,772	4	51,297
Other	27,366	8,254	3,334	51	1,055	1,491	41,551
TOTAL	**79,541**	**50,688**	**69,535**	**730**	**33,085**	**9,332**	**242,911**

(1) Includes Agricultural Research Trust.
(2) Includes only annual funding by the Government of Alberta - other funds are excluded.

Figure VI Total Expenditures on Scientific Activities by Sources of Funds and Major Departments, 1987-88

Department or agency	Departmental budget	Transfer from other departments	Trust fund	Other sources	Total
	($'000)				
Agriculture(1)	12,826	-	5,000	267	18,093
Culture	7,321	-	-	112	7,433
Environment	14,090	-	500	-	14,590
Environmental Centre	10,318	437	-	321	11,076
Forestry, Lands & Wildlife	4,870	-	184	1,661	6,715
Alberta Heritage Foundation for Medical Research	-	-	-	51,167	51,167
AOSTRA	3,494	-	32,805	-	36,299
Technology, Research & Telecommunications	51,297	-	-	-	51,297
Other	36,784	679	2,809	5,969	46,241
TOTAL	**141,000**	**1,116**	**41,298**	**59,497**	**242,911**
%	58.0	0.5	17.0	24.5	100.0

(1) Includes Agricultural Research Trust.

The Alberta Heritage Savings Trust Fund is the source of 90% of AOSTRA's science expenditures. In total, the Fund is the source of 17% of the 1987-88 provincial science expenditures. Other sources include the Alberta/Canada Energy Resources Research Fund and the Alberta Heritage Foundation for Medical Research Endowment Fund.

Figure VII Objectives of Science Expenditures, 1987-88 and 1988-89

Objective	1987-88 ($'000)	1987-88 %	1988-89 ($'000)	1988-89 %
Advancement of science	9,208	3.8	8,829	3.9
Energy and fuels:				
Fossil Fuels	33,371	13.7	36,590	16.1
Other	1,560	0.6	1,779	0.8
Environmental issues:				
Air	3,691	1.5	1,026	0.5
Water	6,839	2.8	2,681	1.2
Other	6,192	2.6	3,834	1.7
Health	62,523	25.7	52,541	23.1
Industrial and economic development:				
Agriculture	20,876	8.6	23,950	10.5
Forestry	5,220	2.2	4,799	2.1
Manufacturing	52,861	21.8	49,348	21.7
Other	6,112	2.5	6,107	2.7
Social development:				
Culture, sport & recreation	8,608	3.5	8,582	3.8
Education	3,448	1.4	3,467	1.5
Other	10,477	4.3	10,865	4.8
Transportation	10,974	4.5	11,111	4.9
All other	951	0.4	1,566	0.7
TOTAL	**242,911**	**100.0**	**227,075**	**100.0**

The major applications of science expenditures are reflected in Figure VII. Over 60% of the Government's science expenditures were devoted to health issues and industrial and economic development. This trend will continue into 1988-89. The major departments or agencies supporting these applications are the Alberta Heritage Foundation for Medical Research, Technology, Research and Telecommunications and Agriculture.

As expected, social development is the focus of science activities in the social sciences. The Departments of Culture, Education, and Municipal Affairs are the main supporters.

Approximately 5% (1,755 person-years) of the provincial government labour force were engaged in scientific activities in 1987-88. Over 42% of these were found in the scientific and professional category. In the natural sciences, the technical category was the largest group involved in science and technology. Over $163 million of extramural programs were administered by 129 PYs.

Figure VIII Departmental Personnel Engaged in Scientific Activities by Science Type and Category, 1987-88

Science type and activity	Scientific and professional	Technical	Other	Total
	(person-years)			
Natural sciences:				
R&D	132	162	45	339
RSA	282	410	109	801
AEP(1)	59	6	48	113
Total	473	578	202	1,253
Social sciences:				
R&D	4	-	-	4
RSA	258	121	103	482
AEP(1)	8	-	8	16
Total	270	121	111	502
TOTAL	743	699	313	1,755

(1) Administration of extramural programs.

All Sciences

TABLE 1. Total Expenditures by Activity, 1981-82 to 1988-89

Activity	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Research and development								
Current expenditures:								
In-house	11,825	14,751	15,785	15,514	16,577	20,832	13,854	12,579
Contracts	47,156	51,969	46,658	84,980	56,102	88,099	41,598	44,371
Grants	46,263	62,699	80,923	83,575	104,811	141,860	108,313	94,630
Research fellowships	271	306	503	533	453	433	958	922
Administration of extramural R&D programs .	...	...	...	...	...	...	7,451	7,390
Sub-total	105,515	129,725	143,869	184,602	177,943	251,224	172,174	159,892
Capital expenditures	1,932	8,030	11,411	2,398	1,174	698	522	396
Related scientific activities								
Current expenditures	56,190	69,138	75,539	78,141	86,686	75,987	66,893	63,830
Administration of extramural RSA programs ...	...	...	...	...	...	...	563	583
Sub-total	56,190	69,138	75,539	78,141	86,686	75,987	67,456	64,413
Capital expenditures	1,751	5,935	8,049	11,573	6,575	3,518	2,759	2,374
TOTAL	**165,388**	**212,828**	**238,868**	**276,714**	**272,378**	**333,427**	**242,911**	**227,075**

TABLE 2. Total Expenditures by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Advanced Education	...	...	1,354	1,639	2,150	1,783	1,561	1,075
Advanced Education & Manpower	2,344	2,612	...	...	...	...	...	...
Agricultural Research Trust	395	373	369	414	391	410	467	...
Agriculture	14,978	16,391	19,532	19,272	19,787	17,153	17,626	21,408
Alcoholism & Drug Abuse Commission	497	264	320	308	524	584	396	428
Attorney General	290	290	436	407	363	363	326	300
Career Development & Employment	...	...	...	...	...	1,863	1,716	1,631
Community & Occupational Health	...	...	...	...	...	986	1,510	959
Consumer & Corporate Affairs	120	143	172	157	154	174	191	135
Culture (1)	3,318(e)	17,058	22,313	26,628	21,689	19,598	7,433	7,433
Economic Development	5,857	4,093	3,374	3,180	4,418	...	...	...
Economic Development & Trade	...	...	...	...	...	5,740	5,391	5,827
Education	3,050	3,617(e)	2,724	3,019	3,068	2,507	1,728	2,153
Educational Communications Corporation ACCESS	182(e)	200(e)	398	350	350	350	385	398
Energy	...	...	...	...	...	7,917	6,248	6,248
Energy & Natural Resources	20,630	25,210	28,509	19,622	15,197	...	...	...
Environment	12,268	9,687	13,109	15,344	16,748	16,484	14,590	4,631(4)
Environmental Centre	7,441	10,528	11,605	11,330	12,286	11,712	11,076	11,705
Environment Council	1,321	1,243	1,525	1,176	1,060	1,245	1,016	1,096
Executive Council	15,500	19,148	19,950	21,463	26,209	...	...	...
Forestry, Lands & Wildlife	...	...	...	...	...	8,760	6,715	6,075
Alberta Heritage Foundation for Medical Research	13,127	21,588	27,562	32,748	43,878	56,930	51,167	40,820
Hospitals & Medical Care	15,033	19,502	22,253	20,205	23,621	24,690	4,690(3)	5,613
Housing & Public Works	480	...	...	...	...	...	...	...
Housing	...	805	1,206	1,735	2,401	...	...	...
Labour	887	1,105	1,047	1,067	1,239	1,242	1,132	915
Manpower	...	...	1,539	1,412	1,999	...	...	...
Mental Health Research Fund	360	386	754	729	873	700	624	624
Municipal Affairs	1,184	1,408	1,577	1,037	870	3,544	3,583	4,235
AOSTRA	35,335	41,105	40,639	77,132	52,808	78,917	36,299	39,529
Recreation & Parks	910	940	535	882	515	431	488	466
Social Services	...	...	...	...	...	421	579	447
Social Services & Community Health	933	400	463	507	5,481	...	...	...
Solicitor General	1,754	3,478	4,434	4,521	2,234	1,617	1,892	2,770
Technology, Research & Telecommunications	...	...	...	...	...	55,092	51,297	47,310
Tourism	...	...	...	...	...	637	759	761
Tourism & Small Business	1,246	1,597	1,058	713	882	...	...	...
Transportation & Utilities (2)	3,050	6,816	6,892	6,460	7,479	9,310	10,017	9,997
Treasury	2,085	1,994	2,097	2,094	2,172	2,267	2,009	2,086
Workers' Health, Safety & Compensation	813	847	1,122	1,163	1,532	...	...	...
TOTAL	**165,388**	**212,828**	**238,868**	**276,714**	**272,378**	**333,427**	**242,911**	**227,075**

(1) Revisions available only as of 1982-83.
(2) Revisions available only as of 1982-83.
(3) Grants to hospitals for Applied Heart Research no longer included in budget.
(4) Departmental reorganization - no figures available for numerous programs.

TABLE 3. Total Expenditures by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Intramural	53,478	79,999	93,257	92,106	89,309	87,541	79,541	73,717
Industry	43,029	44,502	42,623	78,256	57,643	91,306	50,688	55,941
Universities	22,856	39,242	41,827	45,776	58,824	91,183	69,535	55,941
Hospitals and health organizations	12,801	11,191	16,711	15,320	18,835	18,710	730	974
Alberta Research Council (1)	27,750	32,354	35,043	38,602	39,229	33,765	33,085	29,359
Other	5,474	5,540	9,407	6,654	8,538	10,922	9,332	9,627
TOTAL	165,388	212,828	238,868	276,714	272,378	333,427	242,911	227,075

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 4. Total Expenditures on R&D by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Intramural	13,809	22,834	27,411	18,277	18,156	22,313	21,997	20,532
Industry	28,901	32,579	32,207	68,697	44,442	82,912	44,087	48,578
Universities	21,381	36,842	39,975	43,508	55,451	89,463	68,250	56,532
Hospitals and health organizations	12,801	11,191	16,646	15,244	18,825	18,710	730	974
Alberta Research Council (1)	26,684	31,184	33,370	37,297	38,127	31,021	31,941	28,214
Other	3,871	3,125	5,671	3,977	4,366	7,503	5,691	5,458
TOTAL	107,447	137,755	155,280	187,000	179,367	251,922	172,696	160,288

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 5. Total Expenditures on R&D by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Advanced Education	...	...	19	65	488	462	472	324
Agricultural Research Trust	395	373	369	414	391	410	467	...
Agriculture	10,978	13,699	15,782	11,937	12,471	10,153	9,820	11,988
Alcoholism & Drug Abuse Commission	7	7	1	1	-	-	-	18
Attorney General	290	290	436	407	363	363	326	300
Community & Occupational Health	...	...	...	...	...	234	818	369
Culture	594e	296	773	1,464	1,464	4,211	-	-
Education	384	295e	302	324	526	1,376	753	273
Educational Communications Corporation ACCESS	6e	7e	-	31	31	31	-	-
Energy	...	...	...	...	...	7,235	5,461	5,461
Energy & Natural Resources	10,825	16,412	20,318	12,776	7,618	...	...	...
Environment	3,270	3,558	3,949	4,467	4,949	5,159	4,033	476
Environmental Centre	2,828	4,007	4,399	4,369	4,947	5,373	5,103	6,042
Executive Council	15,500	19,148	19,950	21,463	26,209	...	...	...
Forestry, Lands & Wildlife	...	...	...	...	...	3,244	3,079	3,337
Alberta Heritage Foundation for Medical Research	12,702	20,659	26,656	31,901	43,007	56,475	50,919	40,603
Hospitals & Medical Care	13,388	16,976	19,880	17,836	21,232	22,191	2,285(1)	2,924
Housing	...	385	370	775	958	...	...	...
Housing & Public Works	100	...	...	...	...	...	...	...
Manpower	...	...	90	-	-	...	...	...
Mental Health Research Fund	360	386	754	729	873	700	624	624
Municipal Affairs	105	68	53	-	-	1,088	1,025	1,100
AOSTRA	35,335	41,105	40,639	77,132	52,808	78,917	36,299	39,529
Recreation & Parks	-	-	27	-	-	-	-	-
Social Services	...	...	...	...	...	20	190	207
Technology, Research & Telecommunications	...	...	...	...	...	52,854	49,329	45,320
Tourism	...	...	...	...	...	-	48	30
Transportation & Utilities	272	13	66	762	642	1,426	11,645	1,363
Treasury	61	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	47	71	447	147	390	...	...	...
TOTAL	107,447	137,755	155,280	137,000	179,367	251,922	172,696	160,288

(1) Grants to hospitals for Applied Heart Research no longer included in budget.

TABLE 6. Departmental Personnel Engaged in Scientific Activities by Activity and Category, 1981-82 to 1988-89

Activity and category	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	(person-years)							
Research & development:								
Scientific & professional	165	174	175	190	207	224	136	116
Technical	130	132	137	148	145	159	162	146
Other	57	53	57	68	66	70	45	29
Sub-total	352	359	369	406	418	453	343	291
Related scientific activities:								
Scientific & professional	411	451	595	728	721	630	540	497
Technical	254	286	432	624	589	529	531	473
Other	169	187	206	264	249	232	212	199
Sub-total	884	924	1,233	1,616	1,559	1,391	1,283	1,169
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	...	67	69
Technical	...	...	...	...	...	...	6	3
Other	...	...	...	...	...	...	56	52
Sub-total	...	...	...	...	...	...	129	124
Total scientific activities:								
Scientific & professional	626	625	770	918	928	854	743	682
Technical	384	418	569	772	734	688	699	622
Other	226	240	263	332	315	302	313	280
TOTAL	1,236	1,283	1,602	2,022	1,977	1,844	1,755	1,584

TABLE 7. Total Expenditures by Sources of Funds, 1987-88

Department or agency	Departmental budget	Other departments	Federal government	Trust funds	Other sources	Total
	($'000)					
Advanced Education	1,561	-	-	-	-	1,561
Agriculture Research Trust	-	200	-	-	267	467
Agriculture	12,626	-	-	5,000	-	17,626
Alcoholism & Drug Abuse Commission	396	-	-	-	-	396
Attorney General	326	-	-	-	-	326
Career Development & Employment	1,716	-	-	-	-	1,716
Community & Occupational Health	570	55	-	734	151	1,510
Consumer & Corporate Affairs	191	-	-	-	-	191
Culture	7,321	-	112	-	-	7,433
Economic Development & Trade	5,391	-	-	-	-	5,391
Education	1,728	-	-	-	-	1,728
Educational Communications Corporation ACCESS	385	-	-	-	-	385
Energy	484	-	-	-	5,764	6,248
Environment	14,090	-	-	500	-	14,590
Environmental Centre	10,318	437	-	-	321	11,076
Environment Council	1,016	-	-	-	-	1,016
Forestry, Lands & Wildlife	4,870	-	1,661	184	-	6,715
Alberta Heritage Foundation for Medical Research	-	-	-	-	51,167	51,167
Hospitals & Medical Care	2,627	-	-	2,063	-	4,690
Labour	1,132	-	-	-	-	1,132
Mental Health Research Fund	-	624	-	-	-	624
Municipal Affairs	3,583	-	-	-	-	3,583
AOSTRA	3,494	-	-	32,805	-	36,299
Recreation & Parks	441	-	-	12	35	488
Social Services	579	-	-	-	-	579
Solicitor General	1,892	-	-	-	-	1,892
Technology, Research & Telecommunications	51,297	-	-	-	-	51,297
Tourism	740	-	19	-	-	759
Transportation & Utilities	10,017	-	-	-	-	10,017
Treasury	2,009	-	-	-	-	2,009
TOTAL	**140,800**	**1,316**	**1,792**	**41,298**	**57,705**	**242,911**

TABLE 8. Total Expenditures by Activity and Performer, 1987-88

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	13,854	...	...	...	...	...	13,854
Contracts	170	29,949	4,068	-	6,512	899	41,598
Grants	-	14,138	63,382	658	25,343	4,792	108,313
Research fellowships	-	-	800	72	86	-	958
Administration of extramural R&D programs .	7,451	...	...	...	...	...	7,451
Sub-total	21,475	44,087	68,250	730	31,941	5,691	172,174
Capital expenditures	522	...	...	...	...	...	522
Related scientific activities							
Current expenditures	54,222	6,601	1,285	-	1,144	3,641	66,893
Administration of extramural RSA programs ...	563	...	...	...	...	...	563
Sub-total	54,785	6,601	1,285	-	1,144	3,641	67,456
Capital expenditures	2,759	...	...	...	...	...	2,759
TOTAL	**79,541**	**50,688**	**69,535**	**730**	**33,085**	**9,332**	**242,911**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 9. Total Expenditures by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	532	30	849	51	-	99	1,561
Agricultural Research Trust	22	-	445	-	-	-	467
Agriculture	12,039	798	2,225	-	97	2,467	17,626
Alcoholism & Drug Abuse Commission	396	-	-	-	-	-	396
Attorney General	-	-	326	-	-	-	326
Career Development & Employment	1,227	276	-	-	-	213	1,716
Community & Occupational Health	673	86	751	-	-	-	1,510
Consumer & Corporate Affairs	85	67	-	-	-	39	191
Culture	6,740	-	-	-	-	693	7,433
Economic Development & Trade	4,143	1,129	24	-	5	90	5,391
Education	1,294	118	118	-	-	198	1,728
Educational Communications Corporation ACCESS	311	74	-	-	-	-	385
Energy	475	4,469	468	-	630	206	6,248
Environment	9,613	3,458	203	-	310	1,006	14,590
Environmental Centre	11,044	-	-	-	-	32	11,076
Environment Council	1,016	-	-	-	-	-	1,016
Forestry, Lands & Wildlife	5,107	812	359	-	337	100	6,715
Alberta Heritage Foundation for Medical Research	1,418	-	46,897	-	-	2,852	51,167
Hospitals & Medical Care	2,338	165	796	679	699	13	4,690
Labour	1,132	-	-	-	-	-	1,132
Mental Health Research Fund	-	-	624	-	-	-	624
Municipal Affairs	2,982	530	-	-	35	36	3,583
AOSTRA	3,494	23,657	3,659	-	4,815	674	36,299
Recreation & Parks	327	126	35	-	-	-	488
Social Services	290	133	-	-	-	156	579
Solicitor General	1,464	428	-	-	-	-	1,892
Technology, Research & Telecommunications	360	13,544	11,617	-	25,772	4	51,297
Tourism	391	320	-	-	48	-	759
Transportation & Utilities	8,619	468	139	-	337	454	10,017
Treasury	2,009	-	-	-	-	-	2,009
TOTAL	**79,541**	**50,688**	**69,535**	**730**	**33,085**	**9,332**	**242,911**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 10. Total Expenditures by Department or Agency and Activity, 1987-88

Department or agency	Research and development			Related scientific activities			Total
	Current	AEP(1)	Capital	Current	AEP(1)	Capital	
	($'000)						
Advanced Education	402	70	-	980	109	-	1,561
Agricultural Research Trust	445	22	-	-	-	-	467
Agriculture	8,863	957	-	7,806	-	-	17,626
Alcoholism & Drug Abuse Commission	-	-	-	396	-	-	396
Attorney General	326	-	-	-	-	-	326
Career Development & Employment	-	-	-	1,701	-	15	1,716
Community & Occupational Health	731	77	10	685	-	7	1,510
Consumer & Corporate Affairs	-	-	-	181	10	-	191
Culture	-	-	-	6,444	-	989	7,433
Economic Development & Trade	-	-	-	5,304	30	57	5,391
Education	560	162	31	870	87	18	1,728
Educational Communications Corporation ACCESS	-	-	-	335	-	50	385
Energy	5,165	296	-	737	50	-	6,248
Environment	3,876	82	75	9,996	161	400	14,590
Environmental Centre	4,810	-	293	5,729	-	244	11,076
Environment Council	-	-	-	1,016	-	-	1,016
Forestry, Lands & Wildlife	2,904	125	50	3,548	21	67	6,715
Alberta Heritage Foundation for Medical Research	49,501	1,418	-	248	-	-	51,167
Hospitals & Medical Care	2,187	98	-	2,394	11	-	4,690
Labour	-	-	-	1,132	-	-	1,132
Mental Health Research Fund	624	-	-	-	-	-	624
Municipal Affairs	595	430	-	2,538	20	-	3,583
AOSTRA	32,805	3,484	10	-	-	-	36,299
Recreation & Parks	-	-	-	453	35	-	488
Social Services	190	-	-	389	-	-	579
Solicitor General	-	-	-	1,892	-	-	1,892
Technology, Research & Telecommunications	49,159	170	-	1,949	19	-	51,297
Tourism	48	-	-	711	-	-	759
Transportation & Utilities	1,532	60	53	7,479	10	883	10,017
Treasury	-	-	-	1,980	-	29	2,009
TOTAL	**164,723**	**7,451**	**522**	**66,893**	**563**	**2,759**	**242,911**

(1) Administration of extramural programs.

TABLE 11. Total Expenditures on R&D by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	70	-	351	51	-	-	472
Agricultural Research Trust	22	-	445	-	-	-	467
Agriculture	5,55	198	2,225	-	97	1,645	9,820
Attorney General	-	-	326	-	-	-	326
Community & Occupational Health	107	50	661	-	-	-	818
Education	476	25	88	-	-	164	753
Energy	296	4,051	468	-	630	16	5,461
Environment	2,066	1,501	156	-	310	-	4,033
Environmental Centre	5,071	-	-	-	-	32	5,103
Forestry, Lands & Wildlife	1,670	613	359	-	337	100	3,079
Alberta Heritage Foundation for Medical Research	1,418	-	46,663	-	-	2,838	50,919
Hospitals & Medical Care	98	-	796	679	699	13	2,285
Mental Health Research Fund	-	-	624	-	-	-	624
Municipal Affairs	530	460	-	-	35	-	1,025
AOSTRA	3,494	23,657	3,659	-	4,815	674	36,299
Social Services	190	-	-	-	-	-	190
Technology, Research & Telecommunications	170	13,227	11,299	-	24,633	-	49,329
Tourism	-	-	-	-	48	-	48
Transportation & Utilities	664	305	130	-	337	209	1,645
TOTAL	21,475	44,087	68,250	730	31,941	5,691	172,174

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 12. Intramural Expenditures by Department or Agency and Type of Expenditure, 1987-88

Department or agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	($'000)			
Advanced Education	506	26	-	532
Agricultural Research Trust	-	22	-	22
Agriculture	9,029	3,010	-	12,039
Alcoholism & Drug Abuse Commission	286	110	-	396
Attorney General	-	-	-	-
Career Development & Employment	1,172	40	15	1,227
Community & Occupational Health	496	160	17	673
Consumer & Corporate Affairs	75	10	-	85
Culture	3,360	2,391	989	6,740
Economic Development & Trade	2,025	2,061	57	4,143
Education	1,158	87	49	1,294
Educational Communications Corporation ACCESS	230	31	50	311
Energy	286	189	-	475
Environment	7,361	1,777	475	9,613
Environmental Centre	8,072	2,435	537	11,044
Environment Council	797	219	-	1,016
Forestry, Lands & Wildlife	2,837	2,153	117	5,107
Alberta Heritage Foundation for Medical Research	532	886	-	1,418
Hospitals & Medical Care	1,238	1,100	-	2,338
Labour	919	213	-	1,132
Mental Health Research Fund	-	-	-	-
Municipal Affairs	2,392	590	-	2,982
AOSTRA	2,218	1,266	10	3,494
Recreation & Parks	292	35	-	327
Social Services	179	111	-	290
Solicitor General	1,464	-	-	1,464
Technology, Recreation & Telecommunications	304	56	-	360
Tourism	368	23	-	391
Transportation & Utilities	5,988	1,695	936	8,619
Treasury	1,357	623	29	2,009
TOTAL	**54,941**	**21,319**	**3,281**	**79,541**

TABLE 13. Departmental Personnel Engaged in Scientific Activities, 1987-88

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	-	-	-	-	9	-	1	10
Agricultural Research Trust	-	-	-	-	-	-	-	-
Agriculture	59	83	-	142	115	156	-	271
Alcoholism & Drug Abuse Commission	-	-	-	-	6	2	1	9
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	6	30
Community & Occupational Health	1	-	-	1	6	2	2	10
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	41	65	43	149
Economic Development & Trade	-	-	-	-	48	1	5	54
Education	2	-	-	2	9	3	3	15
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Energy	-	-	-	-	-	-	-	-
Environment	18	15	15	48	45	73	18	136
Environmental Centre	29	54	23	106	40	66	32	138
Environment Council	-	-	-	-	10	3	7	20
Forestry, Lands & Wildlife	18	6	4	28	19	19	-	38
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	20	4	8	32
Labour	-	-	-	-	16	1	10	27
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	1	-	1	2	42	6	11	59
AOSTRA	-	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	5	3	-	8
Social Services	2	-	-	2	3	1	-	4
Solicitor General	-	-	-	-	10	37	-	47
Technology, Research & Telecommunications	-	-	-	-	5	-	-	5
Tourism	-	-	-	-	8	2	2	12
Transportation & Utilities	6	4	2	12	35	77	55	167
Treasury	-	-	-	-	26	2	7	35
TOTAL	136	162	45	343	540	531	212	1,283

TABLE 13. Departmental Personnel Engaged in Scientific Activities, 1987-88 - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	2	-	2	4	11	-	3	14
Agricultural Research Trust	-	-	-	-	-	-	-	-
Agriculture	2	2	8	12	176	241	8	425
Alcoholism & Drug Abuse Commission	-	-	-	-	6	2	1	9
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	6	30
Community & Occupational Health	1	-	1	2	8	2	3	13
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	41	65	43	149
Economic Development & Trade	-	-	2	2	48	1	7	56
Education	3	-	2	5	14	3	5	22
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Energy	5	-	3	8	5	-	3	8
Environment	3	3	2	8	66	91	35	192
Environmental Centre	-	-	-	-	69	120	55	244
Environment Council	-	-	-	-	10	3	7	20
Forestry, Lands & Wildlife	4	-	1	5	41	25	5	71
Alberta Heritage Foundation for Medical Research	4	-	10	14	4	-	10	14
Hospitals & Medical Care	2	-	1	3	22	4	9	35
Labour	-	-	-	-	16	1	10	27
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	4	-	2	6	47	6	14	67
AOSTRA	32	-	21	53	32	-	21	53
Recreation & Parks	1	-	-	1	6	3	-	9
Social Services	-	-	-	-	5	1	-	6
Solicitor General	-	-	-	-	10	37	-	47
Technology, Research & Telecommunications	3	-	1	4	8	-	1	9
Tourism	-	-	-	-	8	2	2	12
Transportation & Utilities	1	1	-	2	42	82	57	181
Treasury	-	-	-	-	26	2	7	35
TOTAL	**67**	**6**	**56**	**129**	**743**	**699**	**313**	**1,755**

TABLE 14. Objectives of Expenditures by Department or Agency, 1987-88

Department or agency	Advancement of science science	Energy and fuels				Environmental issues			
		Conservation	Fossil fuels	Renewable resources	Other	Air	Land	Water	Other
	($'000)								
Advanced Education	-	-	-	-	-	-	-	-	-
Agricultural Research Trust	-	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	-	-	-	-	-
Community and Occupational Health	-	-	-	-	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	-	-	-
Economic Development & Trade	-	-	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-	-	-	-
Energy	468	348	5,392	40	-	-	-	-	-
Environment	-	-	-	-	-	2,894	1,671	5,479	2,327
Environmental Centre	-	-	154	-	-	797	223	1,325	788
Environment Council	-	-	-	-	-	-	-	-	1,016
Forestry, Lands & Wildlife	-	-	-	-	-	-	118	-	-
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-	-	-
Mental Health Research Fund	-	-	-	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	1,172	-	-	-	-
AOSTRA	8,474	-	27,825	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-	35	49
Social Services	-	-	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-	-	-
Technology, Research & Telecommunications	266	-	-	-	-	-	-	-	-
Tourism	-	-	-	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-	-	-
TOTAL	**9,208**	**348**	**33,371**	**40**	**1,172**	**3,691**	**2,012**	**6,839**	**4,180**

TABLE 14. Objectives of Expenditures by Department or Agency, 1987-88 - Continued

Department or agency	Health	Industrial and economic development				
		Agriculture	Fisheries	Forestry	Manufacturing	Other
	($'000)					
Advanced Education	246	-	-	-	-	-
Agricultural Research Trust	-	467	-	-	-	-
Agriculture	-	17,626	-	-	-	-
Alcoholism & Drug Abuse Commission	396	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	-	-
Community and Occupational Health	1,510	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-
Culture	-	-	-	-	-	-
Economic Development & Trade	-	-	-	-	1,830	2,578
Education	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-
Energy	-	-	-	-	-	-
Environment	187	-	-	-	-	2,032
Environmental Centre	3,691	2,711	154	155	-	321
Environment Council	-	-	-	-	-	-
Forestry, Lands & Wildlife	-	72	409	5,065	-	100
Alberta Heritage Foundation for Medical Research	51,167	-	-	-	-	-
Hospitals & Medical Care	4,690	-	-	-	-	-
Labour	-	-	-	-	-	518
Mental Health Research Fund	624	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
AOSTRA	-	-	-	-	-	-
Recreation & Parks	12	-	-	-	-	-
Social Services	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-
Technology, Research & Telecommunications	-	-	-	-	51,031	-
Tourism	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-
Treasury	-	-	-	-	-	-
TOTAL	**62,523**	**20,876**	**563**	**5,220**	**52,861**	**5,549**

TABLE 14. Objectives of Expenditures by Department or Agency, 1987-88 - Concluded

Department or agency	Social development					Transportation	Wildlife	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other			
	($'000)							
Advanced Education	-	1,228	87	-	-	-	-	1,561
Agricultural Research Trust	-	-	-	-	-	-	-	467
Agriculture	-	-	-	-	-	-	-	17,626
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	-	396
Attorney General	-	-	-	-	326	-	-	326
Career Development & Employment	-	-	1,716	-	-	-	-	1,716
Community and Occupational Health	-	-	-	-	-	-	-	1,510
Consumer & Corporate Affairs	-	-	-	-	191	-	-	191
Culture	7,433	-	-	-	-	-	-	7,433
Economic Development & Trade	26	-	-	-	-	957	-	5,391
Education	-	1,728	-	-	-	-	-	1,728
Educational Communications Corporation ACCESS	-	385	-	-	-	-	-	385
Energy	-	-	-	-	-	-	-	6,248
Environment	-	-	-	-	-	-	-	14,590
Environmental Centre	757	-	-	-	-	-	-	11,076
Environment Council	-	-	-	-	-	-	-	1,016
Forestry, Lands & Wildlife	-	-	-	-	-	-	951	6,715
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	51,167
Hospitals & Medical Care	-	-	-	-	-	-	-	4,690
Labour	-	-	614	-	-	-	-	614
Mental Health Research Fund	-	-	-	-	-	-	-	624
Municipal Affairs	-	-	-	2,411	-	-	-	3,583
AOSTRA	-	-	-	-	-	-	-	36,299
Recreation & Parks	392	-	-	-	-	-	-	488
Social Services	-	107	90	-	382	-	-	579
Solicitor General	-	-	-	-	1,892	-	-	1,892
Technology, Research & Telecommunications	-	-	-	-	-	-	-	51,297
Tourism	-	-	-	-	759	-	-	759
Transportation & Utilities	-	-	-	-	-	10,017	-	10,017
Treasury	-	-	-	-	2,009	-	-	2,009
TOTAL	8,608	3,448	2,507	2,411	5,559	10,974	951	242,911

TABLE 15. Objectives of Expenditures by Activity, 1987-88

Objective	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	($'000)				
Advancement of science	-	-	9,192	16	9,208
Energy and fuels:					
Conservation	45	25	278	-	348
Fossil fuels	3,869	144	28,750	608	33,371
Renewable resources	30	10	-	-	40
Other	530	85	495	62	1,172
Environmental issues:					
Air	993	1,917	759	22	3,691
Land	1,186	129	645	52	2,012
Water	540	5,437	347	515	6,839
Other	820	1,484	163	1,713	4,180
Health	2,764	5,884	53,336	539	62,523
Industrial and economic development:					
Agriculture	6,756	7,984	4,642	1,494	20,876
Fisheries	275	239	26	23	563
Forestry	1,422	2624	1,174	-	5,220
Manufacturing	170	1,874	48,909	1,908	52,861
Other	321	3,349	100	1,779	5,549
Social development:					
Culture, sport and recreation	594	7,218	-	796	8,608
Education	546	1,542	469	891	3,448
Human resources	80	1,854	-	573	2,507
Urban and regional studies	-	2,367	-	44	2,411
Other	110	4,049	374	1,026	5,559
Transportation	664	8,771	981	558	10,974
Wildlife	282	558	59	52	951
TOTAL	21,997	57,544	150,698	12,671	242,911

TABLE 16. Total Expenditures by Activity and Performer, 1988-89e

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	12,579	...	...	...	...	...	12,579
Contracts	167	33,260	3,523	-	6,503	918	44,371
Grants	-	15,318	52,269	872	21,631	4,540	94,630
Research fellowships	-	-	740	102	80	0	922
Administration of extramural R&D programs .	7,390	...	...	...	...	...	7,390
Sub-total	20,136	48,578	56,532	974	28,214	5,458	159,892
Capital expenditures	396	...	...	...	...	...	396
Related scientific activities							
Current expenditures	50,228	7,363	925	-	1,145	4,169	63,830
Administration of extramural RSA programs ...	583	...	...	...	...	...	583
Sub-total	50,811	7,363	925	-	1,145	4,169	64,413
Capital expenditures	2,374	...	...	...	...	...	2,374
TOTAL	73,717	55,941	57,457	974	29,359	9,627	227,075

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 17. Total Expenditures by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	528	30	413	48	-	56	1,075
Agriculture	14,665	856	2,569	-	107	3,211	21,408
Alcoholism & Drug Abuse Commission	428	-	-	-	-	-	428
Attorney General	-	-	300	-	-	-	300
Career Development & Employment	1,130	275	-	-	-	226	1,631
Community & Occupational Health	571	24	322	-	25	17	959
Consumer & Corporate Affairs	75	30	-	-	-	30	135
Culture	6,740	-	-	-	-	693	7,433
Economic Development & Trade	4,718	1,000	20	-	5	84	5,827
Education	1,376	337	128	-	-	312	2,153
Educational Communications Corporation ACCESS	329	69	-	-	-	-	398
Energy	475	4,469	468	-	630	206	6,248
Environment	2,033	1,625	20	-	90	863	4,631
Environmental Centre	10,595	810	-	-	300	-	11,705
Environment Council	1,096	-	-	-	-	-	1,096
Forestry, Lands & Wildlife	4,131	1,120	310	-	362	152	6,075
Alberta Heritage Foundation for Medical Research	1,479	-	37,086	-	-	2,255	40,820
Hospitals & Medical Care	2,211	500	1,027	926	949	-	5,613
Labour	915	-	-	-	-	-	915
Mental Health Research Fund	-	-	624	-	-	-	624
Municipal Affairs	3,039	810	-	-	-	386	4,235
AOSTRA	3,529	26,926	3,540	-	4,791	743	39,529
Recreation & Parks	316	150	-	-	-	-	466
Social Services	307	-	-	-	-	140	447
Solicitor General	1,510	1,260	-	-	-	-	2,770
Technology, Research & Telecommunications	360	14,690	10,490	-	21,770	-	47,310
Tourism	393	338	-	-	30	-	761
Transportation & Utilities	8,682	622	140	-	300	253	9,997
Treasury	2,086	-	-	-	-	-	2,086
TOTAL	**73,717**	**55,941**	**57,457**	**974**	**29,359**	**9,627**	**227,075**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 18. Total Expenditures by Department or Agency and Activity, 1988-89e

Department or agency	Research and development			Related scientific activities			Total
	Current	AEP(1)	Capital	Current	AEP(1)	Capital	
	($'000)						
Advanced Education	269	55	-	666	85	-	1,075
Agriculture	10,918	1,070	-	9,420	-	-	21,408
Alcoholism & Drug Abuse Commission	18	-	-	410	-	-	428
Attorney General	300	-	-	-	-	-	300
Career Development & Employment	-	-	-	1,608	-	23	1,631
Community & Occupational Health	314	45	10	583	-	7	959
Consumer & Corporate Affairs	-	-	-	130	5	-	135
Culture	-	-	-	6,444	-	989	7,433
Economic Development & Trade	-	-	-	5,724	35	68	5,827
Education	220	50	3	1,670	198	12	2,153
Educational Communications Corporation ACCESS	-	-	-	382	-	16	398
Energy	5,165	296	-	737	50	-	6,248
Environment	423	53	-	4,025	50	80	4,631
Environmental Centre	5,639	60	343	5,394	-	269	11,705
Environment Council	-	-	-	1,096	-	-	1,096
Forestry, Lands & Wildlife	3,196	141	-	2,728	5	5	6,075
Alberta Heritage Foundation for Medical Research	39,124	1,479	-	217	-	-	40,820
Hospitals & Medical Care	2,902	22	-	2,618	71	-	5,613
Labour	-	-	-	915	-	-	915
Mental Health Research Fund	624	-	-	-	-	-	624
Municipal Affairs	730	370	-	3,115	20	-	4,235
AOSTRA	36,000	3,519	10	-	-	-	39,529
Recreation & Parks	-	-	-	432	34	-	466
Social Services	207	-	-	240	-	-	447
Solicitor General	-	-	-	2,770	-	-	2,770
Technology, Research & Telecommunications	45,150	170	-	1,970	20	-	47,310
Tourism	30	-	-	731	-	-	761
Transportation & Utilities	1,273	60	30	7,749	10	875	9,997
Treasury	-	-	-	2,056	-	30	2,086
TOTAL	**152,602**	**7,390**	**396**	**63,830**	**583**	**2,374**	**227,075**

(1) Administration of extramural programs.

TABLE 19. Total Expenditures on R&D by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	55	-	221	48	-	-	324
Agriculture	6,957	214	2,569	-	107	2,141	11,988
Alcoholism & Drug Abuse Commission	18	-	-	-	-	-	18
Attorney General	-	-	300	-	-	-	300
Community & Occupational Health	75	-	252	-	25	17	369
Education	129	7	30	-	-	107	273
Educational Communications Corporation ACCESS	-	-	-	-	-	-	-
Energy	296	4,051	468	-	630	16	5,461
Environment	83	303	-	-	90	-	476
Environmental Centre	4,932	810	-	-	300	-	6,042
Forestry Lands & Wildlife	1,440	1,073	310	-	362	152	3,337
Alberta Heritage Foundation for Medical Research	1,479	-	36,881	-	-	2,243	40,603
Hospitals & Medical Care	22	-	1,027	926	949	-	2,924
Mental Health Research Fund	-	-	624	-	-	-	624
Municipal Affairs	470	630	-	-	-	-	1,100
AOSTRA	3,529	26,926	3,540	-	4,791	743	39,529
Social Services	207	-	-	-	-	-	207
Technology, Research & Telecommunications	170	14,350	10,170	-	20,630	-	45,320
Tourism	-	-	-	-	30	-	30
Transportation & Utilities	670	214	140	-	300	39	1,363
TOTAL	**20,532**	**48,578**	**56,532**	**974**	**28,214**	**5,458**	**159,892**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

Table 20. Departmental Personnel Engaged in Scientific Activities, 1988-89e

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	-	-	-	-	9	-	2	11
Agriculture	59	83	-	142	115	156	-	271
Alcoholism & Drug Abuse Commission	-	1	-	1	6	3	1	10
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	7	31
Community & Occupational Health	1	-	-	1	6	2	2	10
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	41	65	43	149
Economic Development & Trade	-	-	-	-	48	1	4	53
Education	2	-	-	2	9	3	3	15
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Energy	-	-	-	-	-	-	-	-
Environment	-	-	-	-	11	23	3	37
Environmental Centre	26	52	21	99	37	61	32	130
Environment Council	-	-	-	-	10	3	7	20
Forestry, Lands & Wildlife	17	7	4	28	19	17	-	36
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	19	4	8	31
Labour	-	-	-	-	12	1	9	27
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	1	-	1	2	43	-	17	60
AOSTRA	-	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	5	4	-	9
Social Services	3	-	-	3	3	1	-	4
Solicitor General	-	-	-	-	10	37	-	47
Technology, Research & Telecommunications	-	-	-	-	5	-	-	5
Tourism	-	-	-	-	8	2	2	12
Transportation & Utilities	7	3	3	13	34	80	52	166
Treasury	-	-	-	-	25	2	6	33
TOTAL	**116**	**146**	**29**	**291**	**497**	**473**	**199**	**1,169**

TABLE 20. Departmental Personnel Engaged in Scientific Activities, 1988-89e - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	2	-	1	3	11	-	3	14
Agriculture	2	2	8	12	176	241	8	425
Alcoholism & Drug Abuse Commission	-	-	-	-	6	4	1	11
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	7	31
Community & Occupational Health	1	-	-	1	8	2	2	12
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	41	65	43	149
Economic Development & Trade	-	-	2	2	48	1	6	55
Education	3	-	1	4	14	3	4	21
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Energy	5	-	3	8	5	-	3	8
Environment	2	-	2	4	13	23	5	41
Environmental Centre	1	-	1	2	64	113	54	231
Environment Council	-	-	-	-	10	3	7	20
Forestry, Lands & Wildlife	4	-	1	5	40	24	5	69
Alberta Heritage Foundation for Medical Research	4	-	10	14	4	-	10	14
Hospitals & Medical Care	1	-	1	2	20	4	9	33
Labour	-	-	-	-	12	1	9	22
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	6	-	2	8	50	-	20	70
AOSTRA	33	-	19	52	33	-	19	52
Recreation & Parks	1	-	-	1	6	4	-	10
Social Services	-	-	-	-	6	1	-	7
Solicitor General	-	-	-	-	10	37	-	47
Technology, Research & Telecommunications	3	-	1	4	8	-	1	9
Tourism	-	-	-	-	8	2	2	12
Transportation & Utilities	1	1	-	2	42	84	55	181
Treasury	-	-	-	-	25	2	6	33
TOTAL	**69**	**3**	**52**	**124**	**682**	**622**	**280**	**1,584**

TABLE 21. Objectives of Expenditures by Department or Agency, 1988-89e

Department or agency	Advancement of science science	Energy and fuels				Environmental issues			
		Conservation	Fossil fuels	Renewable resources	Other	Air	Land	Water	Other
	($'000)								
Advanced Education	-	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	-	-	-
Attorney General	-	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	-	-	-	-	-
Community & Occupational Health	30	-	-	-	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	-	-	-
Economic Development & Trade	-	-	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-	-	-	-	-	-
Energy	468	348	5,392	40	-	-	-	-	-
Environment	-	-	-	-	-	-	349	954	1,265
Environmental Centre	-	146	-	-	-	1,026	207	1,727	749
Environment Council	-	-	-	-	-	-	-	-	1,096
Forestry, Lands & Wildlife	-	-	-	-	-	-	118	-	-
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-	-	-
Mental Health Research Fund	-	-	-	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-	-	-	-
AOSTRA	8,331	-	31,198	-	1,245	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-	-	50
Social Services	-	-	-	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-	-	-	-
Technology, Research & Telecommunications	-	-	-	-	-	-	-	-	-
Tourism	-	-	-	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-	-	-	-
Treasury	-	-	-	-	-	-	-	-	-
TOTAL	8,829	494	36,590	40	1,245	1,026	674	2,681	3,160

TABLE 21. Objectives of Expenditures by Department or Agency, 1988-89e - Continued

Department or agency	Health	Industrial and economic development				
		Agriculture	Fisheries	Forestry	Manufacturing	Other
	($'000)					
Advanced Education	240	-	-	-	-	-
Agriculture	-	21,408	-	-	-	-
Alcoholism & Drug Abuse Commission	428	-	-	-	-	-
Attorney General	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	-	-
Community & Occupational Health	929	-	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-	-	-
Culture	-	-	-	-	-	-
Economic Development & Trade	-	-	-	-	-	-
Education	-	-	-	-	2,038	2,692
Educational Communications Corporation ACCESS	-	-	-	-	-	-
Energy	-	-	-	-	-	-
Environment	-	-	-	-	-	-
Environmental Centre	3,875	2,542	146	149	-	2,063
Environment Council	-	-	-	-	-	416
Forestry, Lands & Wildlife	-	-	362	4,650	-	100
Alberta Heritage Foundation for Medical Research	40,820	-	-	-	-	-
Hospitals & Medical Care	5,613	-	-	-	-	-
Labour	-	-	-	-	-	328
Mental Health Research Fund	624	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
AOSTRA	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-
Social Services	-	-	-	-	-	-
Solicitor General	-	-	-	-	-	-
Technology, Research & Telecommunications	-	-	-	-	47,310	-
Tourism	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-
Treasury	-	-	-	-	-	-
TOTAL	52,541	23,950	508	4,799	49,348	5,599

TABLE 21. Objectives of Expenditures by Department or Agency, 1988-89e - Concluded

Department or agency	Social development					Transportation	Wildlife	Other	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other				
	($'000)								
Advanced Education	-	796	39	-	-	-	-	-	1,075
Agriculture	-	-	-	-	-	-	-	-	21,408
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	-	-	428
Attorney General	-	-	-	-	300	-	-	-	300
Career Development & Employment	-	-	1,631	-	-	-	-	-	1,631
Community & Occupational Health	-	-	-	-	-	-	-	-	959
Consumer & Corporate Affairs	-	-	-	-	135	-	-	-	135
Culture	7,433	-	-	-	-	-	-	-	7,433
Economic Development & Trade	23	-	-	-	-	-	-	1,074	5,827
Education	-	2,153	-	-	-	-	-	-	2,153
Educational Communications Corporation ACCESS	-	398	-	-	-	-	-	-	398
Energy	-	-	-	-	-	-	-	-	6,248
Environment	-	-	-	-	-	-	-	-	4,631
Environmental Centre	722	-	-	-	-	-	-	-	11,705
Environment Council	-	-	-	-	-	-	-	-	1,096
Forestry, Lands & Wildlife	-	-	-	-	-	-	845	-	6,075
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-	40,802
Hospitals & Medical Care	-	-	-	-	-	-	-	-	5,613
Labour	-	-	587	-	-	-	-	-	907
Mental Health Research Fund	-	-	-	-	-	-	-	-	624
Municipal Affairs	-	-	-	2,750	240	-	-	-	4,235
AOSTRA	-	-	-	-	-	-	-	-	39,529
Recreation & Parks	404	-	-	-	-	-	-	-	466
Social Services	-	120	80	-	207	40	-	-	447
Solicitor General	-	-	-	-	2,770	-	-	-	2,770
Technology, Research & Telecommunications	-	-	-	-	-	-	-	-	47,310
Tourism	-	-	-	-	761	-	-	-	761
Transportation & Utilities	-	-	-	-	-	9,997	-	-	9,997
Treasury	-	-	-	-	1,365	-	-	721	2,086
TOTAL	8,582	3,467	2,337	2,750	5,778	11,111	845	1,795	227,875

TABLE 22. Objectives of Expenditures by Activity, 1988-89e

Objective	Intramural		Extramural		
	Research and development	Related scientific activities	Research and development	Related scientific activities	Total
	($'000)				
Advancement of science	-	30	8,799	-	8,829
Energy and fuels:					
Conservation	191	25	278	-	494
Fossil fuels	3,750	144	32,088	608	36,590
Renewable resources	30	10	-	-	40
Other	470	105	630	40	1,245
Environmental issues:					
Air	377	379	270	-	1,026
Land	183	119	372	-	674
Water	249	1,710	505	217	2,681
Other	753	1,144	88	1,175	3,160
Health	2,599	5,617	43,514	811	52,541
Industrial and economic development:					
Agriculture	7,982	9,225	5,031	1,712	23,950
Fisheries	247	226	21	14	508
Forestry	1,252	1,922	1,625	-	4,799
Manufacturing	170	2,099	45,150	1,929	49,348
Other	416	3,388	100	1,695	5,599
Social development:					
Culture, sport and recreation	566	7,200	-	816	8,582
Education	184	2,000	213	1,070	3,467
Human resources	80	1,726	-	531	2,337
Urban and regional studies	-	2,264	-	486	2,750
Other	107	3,643	330	1,698	5,778
Transportation	690	8,961	693	767	11,111
Wildlife	236	527	49	33	845
Other	-	721	-	-	721
TOTAL	20,532	53,185	139,756	13,602	227,075

Natural Sciences

TABLE 23. Total Expenditures in the Natural Sciences by Activity, 1981-82 to 1988-89

Activity	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Research and development								
Current expenditures:								
In-house	11,156	14,514	15,128	14,251	15,312	17,105	13,491	12,385
Contracts	46,592	51,563	46,107	84,544	55,733	86,724	41,096	44,090
Grants	45,235	61,661	79,695	82,533	103,084	140,493	107,096	93,757
Research fellowships	267	283	473	528	433	412	847	820
Administration of extramural R&D programs .	...	...	...	...	...	...	7,102	7,271
Sub-total	103,250	128,021	141,403	181,856	174,562	244,734	169,632	158,323
Capital expenditures	1,929	8,020	11,409	2,396	1,171	653	491	393
Related scientific activities								
Current expenditures:								
Education support	...	...	...	112	84	66	55	55
Technical surveys	...	...	...	26,713	26,550	26,739	22,921	18,401
Information services	...	...	...	5,526	6,042	8,028	7,282	7,716
Special services & studies	...	...	...	5,319	6,347	5,283	7,491	5,899
Museum services	...	...	...	892	953	1,911	1,833	1,833
Administration of extramural RSA programs .	...	...	...	...	...	...	265	139
Sub-total	30,586	30,592	34,807	38,562	39,976	42,027	39,847	34,043
Capital expenditures	1,712	2,357	2,408	1,839	1,844	1,578	1,594	1,229
TOTAL	**137,477**	**168,990**	**190,027**	**224,653**	**217,553**	**288,992**	**211,564**	**193,988**

TABLE 24. Total Expenditures in the Natural Sciences by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Agricultural Research Trust	395	373	369	414	391	410	467	...
Agriculture	14,978	16,391	19,532	19,272	19,787	17,153	17,626	21,408
Community & Occupational Health	...	...	...	...	...	120	562	379
Culture	986	578	798	892	953	2,625	1,833	1,833
Energy	...	...	...	...	...	7,917	6,248	6,248
Energy & Natural Resources	20,630	25,210	28,509	19,622	15,197	...	...	...
Environment	11,711	9,179	12,877	15,221	16,233	15,935	14,498	4,553
Environmental Centre	7,441	10,528	11,605	11,330	12,286	11,712	11,076	11,705
Executive Council	15,500	19,148	19,950	21,463	26,209	...	...	...
Forestry, Lands & Wildlife	...	...	...	...	...	8,760	6,715	6,075
Alberta Heritage Foundation for Medical Research	13,127	21,588	27,562	32,748	43,878	56,930	51,167	40,820
Hospitals & Medical Care	12,942	16,865	19,793	17,725	21,121	22,080	2,071	2,808
Housing	...	...	467	885	1,085	...	...	...
Labour	425e	548	483	476	510	558	518	328
Mental Health Research Fund	177	193	409	418	522	407	320	320
Municipal Affairs	...	...	...	...	...	1,233	1,172	1,245
AOSTRA	35,335	41,105	40,639	77,132	52,808	78,917	36,299	39,529
Recreation & Parks	604	429	328	388	265	89	96	62
Technology, Research & Telecommunications	...	...	...	...	...	55,092	51,297	47,310
Transportation & Utilities (1)	3,050	6,816	6,515	6,227	5,908	9,054	9,599	9,365
Workers' Health, Safety & Compensation	176	39	191	440	400	...	...	...
TOTAL	**137,477**	**168,990**	**190,027**	**224,653**	**217,553**	**288,992**	**211,564**	**193,988**

(1) Revisions available as of 1982-83.

TABLE 25. Total Expenditures in the Natural Sciences by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Intramural	35,487	48,603	57,200	49,564	52,213	54,391	55,111	48,634
Industry	35,871	35,452	33,914	72,620	47,103	84,983	47,528	51,358
Universities	21,219	37,383	40,169	43,682	55,291	89,411	67,596	56,222
Hospitals and health organizations	12,630	11,080	16,498	15,206	18,454	18,479	607	824
Alberta Research Council (1)	27,745	32,349	35,038	38,597	39,143	33,748	33,032	29,324
Other	4,525	4,123	7,208	4,984	5,349	7,980	7,690	7,626
TOTAL	**137,477**	**168,990**	**190,027**	**224,653**	**217,553**	**288,992**	**211,564**	**193,988**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 26. Total Expenditures on R&D in the Natural Sciences by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83r	1983-84r	1984-85r	1985-86r	1986-87r	1987-88	1988-89e
	($'000)							
Intramural	13,137	22,534	26,728	17,012	16,888	18,541	21,144	20,109
Industry	28,461	32,058	31,784	68,366	44,031	82,261	44,012	48,571
Universities	20,625	36,199	38,952	42,694	54,151	88,421	66,953	55,677
Hospitals and health organizations	12,630	11,080	16,433	15,130	18,444	18,479	607	824
Alberta Research Council (1)	26,679	31,179	33,365	37,292	38,107	31,021	31,893	28,184
Other	3,647	2,991	5,550	3,758	4,112	6,664	5,514	5,351
TOTAL	**105,179**	**136,041**	**152,812**	**184,252**	**175,733**	**245,387**	**170,123**	**158,716**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 27. Total Expenditures on R&D in the Natural Sciences by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Agricultural Research Trust	395	373	369	414	391	410	467	...
Agriculture	10,978	13,699	15,782	11,937	12,471	10,153	9,820	11,988
Community & Occupational Health	...	...	...	...	...	75	552	369
Culture	-	-	-	-	-	491	-	-
Energy	...	...	...	...	...	7,235	5,461	5,461
Energy & Natural Resources	10,825	16,412	20,318	12,776	7,618	...	...	...
Environment	3,225	3,558	3,949	4,4467	4,949	5,159	4,033	476
Environmental Centre	2,828	4,007	4,399	4,369	4,947	5,373	5,103	6,042
Executive Council	15,500	19,148	19,950	21,463	26,209	...	...	...
Forestry, Lands & Wildlife	...	...	...	...	...	3,244	3,079	3,337
Alberta Heritage Foundation for Medical Research	12,702	20,659	26,656	31,901	43,007	56,475	50,919	40,603
Hospitals & Medical Care	12,942	16,865	19,769	17,725	21,121	22,080	2,071	2,808
Housing	-	-	370	775	958	...	...	...
Mental Health Research Fund	177	193	409	418	522	407	320	320
Municipal Affairs	-	-	-	-	-	1,088	1,025	1,100
AOSTRA	35,335	41,105	40,639	77,132	52,808	78,917	36,299	39,529
Recreation & Parks	-	-	-	27	-	-	-	-
Technology, Research & Telecommunications	...	...	...	...	...	52,854	49,329	45,320
Transportation & Utilities	272	13	66	762	642	1,426	1,645	1,363
Workers' Health, Safety & Compensation	-	9	109	113	90	...	...	...
TOTAL	**105,179**	**136,041**	**152,812**	**184,252**	**175,733**	**245,387**	**170,123**	**158,716**

TABLE 28 . Departmental Personnel Engaged in Scientific Activities in the Natural Sciences, by Activity and Category, 1981-82 to 1988-89

Activity and category	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	(person-years)							
Research & development:								
Scientific & professional	138	150	159	154	171	180	132	111
Technical	128	130	137	147	144	154	162	145
Other	50	50	52	66	64	66	45	29
Sub-total	316	330	348	367	379	400	339	285
Related scientific activities:								
Scientific & professional	179	190	297	323	337	324	282	241
Technical	183	220	376	426	414	434	410	356
Other	61	84	75	76	81	125	109	91
Sub-total	423	494	748	825	832	883	801	688
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	...	59	60
Technical	...	...	...	...	...	...	6	3
Other	...	...	...	...	...	...	48	47
Sub-total	...	...	...	...	...	...	113	110
Total scientific activities:								
Scientific & professional	317	340	456	477	508	504	473	412
Technical	311	350	513	573	558	588	578	504
Other	111	134	127	142	145	191	202	167
TOTAL	739	824	1,096	1,192	1,211	1,283	1,253	1,083

TABLE 29. Total Expenditures in the Natural Sciences by Sources of Funds, 1987-88

Department or agency	Departmental budget	Other departments	Federal government	Trust funds	Other sources	Total
	($'000)					
Agricultural Research Trust	-	200	-	-	267	467
Agriculture	12,626	-	-	5,000	-	17,626
Community & Occupational Health	40	-	-	522	-	562
Culture	1,721	-	112	-	-	1,833
Energy	484	-	-	-	5,764	6,248
Environment	13,998	-	-	500	-	14,498
Environmental Centre	10,318	437	-	-	321	11,076
Forestry, Lands & Wildlife	4,870	-	1,661	184	-	6,715
Alberta Heritage Foundation for Medical Research	-	-	-	-	51,167	51,167
Hospitals & Medical Care	8	-	-	2,063	-	2,071
Labour	518	-	-	-	-	518
Mental Health Research Fund	-	320	-	-	-	320
Municipal Affairs	1,172	-	-	-	-	1,172
AOSTRA	3,494	-	-	32,805	-	36,299
Recreation & Parks	49	-	-	12	35	96
Technology, Research & Telecommunications	51,297	-	-	-	-	51,297
Transportation & Utilities	9,599	-	-	-	-	9,599
TOTAL	**110,194**	**957**	**1,773**	**41,086**	**57,554**	**211,564**

TABLE 30. Total Expenditures in the Natural Sciences by Activity and Performer, 1987-88

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	13,491	...	...	...	...	...	13,491
Contracts	60	29,874	3,976	-	6,464	722	41,096
Grants	-	14,138	62,216	607	25,343	4,792	107,096
Research fellowships	-	-	761	-	86	-	847
Administration of extramural R&D programs	7,102	...	...	...	...	...	7,102
Sub-total	20,653	44,012	66,953	607	31,893	5,514	169,632
Capital expenditures	491	...	...	...	...	...	491
Related scientific activities							
Current expenditures:							
Education support	55	-	-	-	-	-	55
Technical surveys	20,578	1,258	68	-	-	1,017	22,921
Information services	6,021	664	552	-	-	45	7,282
Special services and studies	3,761	1,594	23	-	1,139	974	7,491
Museum services	1,693	-	-	-	-	140	1,833
Administration of extramural RSA programs	265	...	...	...	...	...	265
Sub-total	32,373	3,516	643	-	1,139	2,176	39,847
Capital expenditures	1,594	...	...	...	...	...	1,594
TOTAL	**55,111**	**47,528**	**67,596**	**607**	**33,032**	**7,690**	**211,564**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 31. Total Expenditures in the Natural Sciences by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Agricultural Research Trust	22	-	445	-	-	-	467
Agriculture	12,039	798	2,225	-	97	2,467	17,626
Community & Occupational Health	90	-	472	-	-	-	562
Culture	1,693	-	-	-	-	140	1,833
Energy	475	4,469	468	-	630	206	6,248
Environment	9,607	3,372	203	-	310	1,006	14,498
Environmental Centre	11,044	-	-	-	-	32	11,076
Forestry, Lands & Wildlife	5,107	812	359	-	337	100	6,715
Alberta Heritage Foundation for Medical Research	1,418	-	46,897	-	-	2,852	51,167
Hospitals & Medical Care	8	-	757	607	699	-	2,071
Labour	518	-	-	-	-	-	518
Mental Health Research Fund	-	-	320	-	-	-	320
Municipal Affairs	615	522	-	-	35	-	1,172
AOSTRA	3,494	23,657	3,659	-	4,815	674	36,299
Recreation & Parks	12	49	35	-	-	-	96
Technology, Research & Telecommunications	360	13,544	11,617	-	25,772	4	51,297
Transportation & Utilities	8,609	305	139	-	337	214	9,599
TOTAL	**55,111**	**47,528**	**67,596**	**607**	**33,032**	**7,690**	**211,564**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 32. Total Expenditures on R&D in the Natural Sciences by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Agricultural Research Trust	22	-	445	-	-	-	467
Agriculture	5,655	198	2,225	-	97	1,645	9,820
Community & Occupational Health	80	-	472	-	-	-	552
Culture	-	-	-	-	-	-	-
Energy	296	4,051	468	-	630	16	5,461
Environment	2,066	1,501	156	-	310	-	4,033
Environmental Centre	5,071	-	-	-	-	32	5,103
Forestry, Lands & Wildlife	1,670	613	359	-	337	100	3,079
Alberta Heritage Foundation for Medical Research	1,418	-	46,663	-	-	2,838	50,919
Hospitals & Medical Care	8	-	757	607	699	-	2,071
Mental Health Research Fund	-	-	320	-	-	-	320
Municipal Affairs	530	460	-	-	35	-	1,025
AOSTRA	3,494	23,657	3,659	-	4,815	674	36,299
Technology, Research & Telecommunications	170	13,227	11,299	-	24,663	-	49,329
Transportation & Utilities	664	305	130	-	337	209	1,645
TOTAL	**21,144**	**44,012**	**66,953**	**607**	**31,893**	**5,514**	**170,123**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 33. Total Expenditures in the Natural Sciences by Department or Agency and Activity, 1987-88

	Research and development			Related scientific activities							Total
	Current	AEP(1)	Capital	Education support	Technical surveys	Information services	Special services and studies	Museum services	AEP(1)	Capital	
	($'000)										
Agricultural Research Trust ..	445	22	-	-	-	-	-	-	-	-	467
Agriculture	8,863	957	-	-	1,200	4,344	2,262	-	-	-	17,626
Community & Occupational Health	492	50	10	-	10	-	-	-	-	-	562
Culture	-	-	-	-	-	-	-	1,833	-	-	1,833
Energy	5,165	296	-	-	163	129	445	-	50	-	6,248
Environment	3,876	82	75	-	7,218	437	2,255	-	155	400	14,498
Environmental Centre	4,810	-	293	-	5,729	-	-	-	-	244	11,076
Forestry, Lands & Wildlife ...	2,904	125	50	55	2,727	624	142	-	21	67	6,715
Alberta Heritage Foundation for Medical Research	49,501	1,418	-	-	-	248	-	-	-	-	51,167
Hospitals & Medical Care	2,063	8	-	-	-	-	-	-	-	-	2,071
Labour	-	-	-	-	-	-	518	-	-	-	518
Mental Health Research Fund ..	320	-	-	-	-	-	-	-	-	-	320
Municipal Affairs	595	430	-	-	-	92	35	-	20	-	1,172
AOSTRA	32,805	3,484	10	-	-	-	-	-	-	-	36,299
Recreation & Parks	-	-	-	-	71	-	25	-	-	-	96
Technology, Research & Telecommunications	49,159	170	-	-	-	530	1,419	-	19	-	51,297
Transportation & Utilities ...	1,532	60	53	-	5,803	878	390	-	-	883	9,599
TOTAL	162,530	7,102	491	55	22,921	7,282	7,491	1,833	265	1,594	211,564

(1) Administration of extramural programs.

TABLE 34. Intramural Expenditures in the Natural Sciences by Department or Agency and Type of Expenditure, 1987-88

Department or agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	($'000)			
Agricultural Research Trust	-	22	-	22
Agriculture	9,029	3,010	-	12,039
Community & Occupational Health	65	15	10	90
Culture	750	943	-	1,693
Energy	286	189	-	475
Environment	7,355	1,777	475	9,607
Environmental Centre	8,072	2,435	537	11,044
Forestry, Lands & Wildlife	2,837	2,153	117	5,107
Alberta Heritage Foundation for Medical Research	532	886	-	1,418
Hospitals & Medical Care	8	-	-	8
Labour	433	85	-	518
Mental Health Research Fund	-	-	-	-
Municipal Affairs	400	215	-	615
AOSTRA	2,218	1,266	10	3,494
Recreation & Parks	12	-	-	12
Technology, Research & Telecommunications	304	56	-	360
Transportation & Utilities	5,978	1,748	883	8,609
TOTAL	**38,279**	**14,747**	**2,085**	**55,111**

TABLE 35. Departmental Personnel Engaged in Scientific Activities in the Natural Sciences by Department or Agency, 1987-88

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Agricultural Research Trust	-	-	-	-	-	-	-	-
Agriculture	59	83	-	142	115	156	-	271
Community & Occupational Health	1	-	-	1	-	-	-	-
Culture	-	-	-	-	12	18	3	33
Energy	-	-	-	-	-	-	-	-
Environment	18	15	15	48	45	73	18	136
Environmental Centre	29	54	23	106	40	66	32	138
Forestry, Lands & Wildlife	18	6	4	28	19	19	-	38
Alberta Heritage Foundation of Medical Research	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-
Labour	-	-	-	-	10	-	-	10
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	1	-	1	2	1	-	1	2
AOSTRA	-	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	1	-	1
Technology, Research & Telecommunications	-	-	-	-	5	-	-	5
Transportation & Utilities	6	4	2	12	35	77	55	167
TOTAL	132	162	45	339	282	410	109	801

TABLE 35. Departmental Personnel Engaged in Scientific Activities in the Natural Sciences by Department or Agency, 1987-88 - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Agricultural Research Trust	-	-	-	-	-	-	-	-
Agriculture	2	2	8	12	176	241	8	425
Community & Occupational Health	1	-	-	1	2	-	-	2
Culture	-	-	-	-	12	18	3	33
Energy	5	-	3	8	5	-	3	8
Environment	3	3	2	8	66	91	35	192
Environmental Centre	-	-	-	-	69	120	55	244
Forestry, Lands & Wildlife	4	-	1	5	41	25	5	71
Alberta Heritage Foundation for Medical Research	4	-	10	14	4	-	10	14
Hospitals & Medical Care	-	-	-	-	-	-	-	-
Labour	-	-	-	-	10	-	-	10
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	4	-	2	6	6	-	4	10
AOSTRA	32	-	21	53	32	-	21	53
Recreation & Parks	-	-	-	-	-	1	-	1
Technology, Research & Telecommunications	3	-	1	4	8	-	1	9
Transportation & Utilities	1	1	-	2	42	82	57	181
TOTAL	59	6	48	113	473	578	202	1,253

TABLE 36. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1987-88

Department or agency	Advancement of science	Energy and fuels				Environmental issues			
		Conservation	Fossil fuels	Renewable resources	Other	Air	Land	Water	Other
	($'000)								
Agricultural Research Trust	-	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-	-
Community & Occupational Health	-	-	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	-	-	-
Energy	468	348	5,392	40	-	-	-	-	-
Environment	-	-	-	-	-	2,894	1,671	5,407	2,307
Environmental Centre	-	-	154	-	-	797	223	1,325	788
Forestry, Lands & Wildlife	-	-	-	-	-	-	118	-	-
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-	-	-
Mental Health Research Fund	-	-	-	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	1,172	-	-	-	-
AOSTRA	8,474	-	27,825	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-	35	49
Technology, Research & Telecommunications	266	-	-	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-	-	-	-
TOTAL	**9,208**	**348**	**33,371**	**40**	**1,172**	**3,691**	**2,012**	**6,767**	**3,144**

TABLE 36. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1987-88 - Continued

Department or agency	Health	Industrial and economic development				
		Agriculture	Fisheries	Forestry	Manufacturing	Other
	($'000)					
Agricultural Research Trust	-	467	-	-	-	-
Agriculture	-	17,626	-	-	-	-
Community & Occupational Health	562	-	-	-	-	-
Culture	-	-	-	-	-	-
Energy	-	-	-	-	-	-
Environment	187	-	-	-	-	2,032
Environmental Centre	3,691	2,711	154	155	-	321
Forestry, Lands & Wildlife	-	72	409	5,065	-	100
Alberta Heritage Foundation for Medical Research	51,167	-	-	-	-	-
Hospitals & Medical Care	2,071	-	-	-	-	-
Labour	-	-	-	-	-	518
Mental Health Research Fund	320	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
AOSTRA	-	-	-	-	-	-
Recreation & Parks	12	-	-	-	-	-
Technology, Research & Telecommunications	-	-	-	-	51,031	-
Transportation & Utilities	-	-	-	-	-	-
TOTAL	**58,010**	**20,876**	**563**	**5,200**	**51,031**	**2,971**

TABLE 36. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1987-88 - Concluded

Department or agency	Culture, sport and recreation	Transportation	Wildlife	Total
	($'000)			
Agricultural Research Trust	-	-	-	467
Agriculture	-	-	-	17,626
Community & Occupational Health	-	-	-	562
Culture	1,833	-	-	1,833
Energy	-	-	-	6,248
Environment	-	-	-	14,498
Environmental Centre	757	-	-	11,076
Forestry, Lands & Wildlife	-	-	951	6,715
Alberta Heritage Foundation for Medical Research	-	-	-	51,167
Hospitals & Medical Care	-	-	-	2,071
Labour	-	-	-	518
Mental Health Research Fund	-	-	-	320
Municipal Affairs	-	-	-	1,172
AOSTRA	-	-	-	36,299
Recreation & Parks	-	-	-	96
Technology, Research & Telecommunications	-	-	-	51,297
Transportation & Utilities	-	9,599	-	9,599
TOTAL	**2,590**	**9,599**	**951**	**211,564**

TABLE 37. Objectives of Expenditures in the Natural Sciences by Activity, 1987-88

Objective	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	($'000)				
Advancement of science	-	-	9,192	16	9,208
Energy and fuels:					
Conservation	45	25	278	-	348
Fossil fuels	3,869	144	28,750	608	33,371
Renewable resources	30	10	-	-	40
Other	530	85	495	62	1,172
Environmental issues:					
Air	993	1,917	759	22	3,691
Land	1,186	129	645	52	2,012
Water	540	5,434	347	446	6,767
Other	820	465	163	1,696	3,144
Health	2,647	2,656	52,459	248	58,010
Industrial and economic development:					
Agriculture	6,756	7,984	4,642	1,494	20,876
Fisheries	275	239	26	23	563
Forestry	1,422	2,624	1,174	-	5,220
Manufacturing	170	190	48,909	1,762	51,031
Other	321	1,706	100	844	2,971
Social development:					
Culture, sport and recreation	594	1,856	-	140	2,590
Transportation	664	7,945	981	9	9,599
Wildlife	282	558	59	52	951
TOTAL	**21,144**	**33,967**	**148,979**	**7,474**	**211,564**

TABLE 38. Total Expenditures in the Natural Sciences by Activity and Performer, 1988-89e

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	12,385	...	...	...	...	...	12,385
Contracts	60	33,253	3,493	-	6,473	811	44,090
Grants	-	15,318	51,444	824	21,631	4,540	93,757
Research fellowships	-	-	740	-	80	-	820
Administration of extramural R&D programs	7,271	...	...	...	...	...	7,271
Sub-total	19,716	48,571	55,677	824	28,184	5,351	158,323
Capital expenditures	393	...	...	...	...	...	393
Related scientific activities							
Current expenditures:							
Education support	55	-	-	-	-	-	55
Technical surveys	16,501	889	10	-	-	1,001	18,401
Information services	6,462	707	535	-	-	12	7,716
Special services and studies	2,446	1,191	-	-	1,140	1,122	5,899
Museum services	1,693	-	-	-	-	140	1,833
Administrataion of extramural RSA programs	139	...	...	...	...	...	139
Sub-total	27,296	2,787	545	-	1,140	2,275	34,043
Capital expenditures	1,229	...	...	...	...	...	1,229
TOTAL	48,634	51,358	56,222	824	29,324	7,626	193,988

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 39. Total Expenditures in the Natural Sciences by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Agriculture	14,665	856	2,569	-	107	3,211	21,408
Community & Occupational Health	85	-	252	-	25	17	379
Culture	1,693	-	-	-	-	140	1,833
Energy	475	4,469	468	-	630	206	6,248
Environment	2,027	1,553	20	-	90	863	4,553
Environmental Centre	10,595	810	-	-	300	-	11,705
Forestry, Lands & Wildlife	4,131	1,120	310	-	362	152	6,075
Alberta Heritage Foundation for Medical Research	1,479	-	37,086	-	-	2,255	40,820
Hospitals & Medical Care	8	-	1,027	824	949	-	2,808
Labour	328	-	-	-	-	-	328
Mental Health Research Fund	-	-	320	-	-	-	320
Municipal Affairs	575	670	-	-	-	-	1,245
AOSTRA	3,529	26,926	3,540	-	4,791	743	39,529
Recreation & Parks	12	50	-	-	-	-	62
Technology, Research & Telecommunications	360	14,690	10,490	-	21,770	-	47,310
Transportation & Utilities	8,672	214	140	-	300	39	9,365
TOTAL	**48,634**	**51,358**	**56,222**	**824**	**29,324**	**7,626**	**193,988**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 40. Total Expenditures in the Natural Sciences by Department or Agency and Activity, 1988-89e

	Research and development			Related scientific activities							Total
	Current	AEP(1)	Capital	Education support	Technical surveys	Information services	Special services and studies	Museum services	AEP(1)	Capital	
	($'000)										
Agriculture	10,918	1,070	-	-	1,499	5,138	2,783	-	-	-	21,408
Community & Occupational Health	314	45	10	-	10	-	-	-	-	-	379
Culture	-	-	-	-	-	-	-	1,833	-	-	1,833
Energy	5,165	296	-	-	163	129	445	-	50	-	6,248
Environment	423	53	-	-	3,487	30	436	-	44	80	4,553
Environmental Centre	5,639	60	343	-	5,394	-	-	-	-	269	11,705
Forestry, Lands & Wildlife	3,196	141	-	55	1,919	622	132	-	5	5	6,075
Alberta Heritage Foundation for Medical Research	39,124	1,479	-	-	-	217	-	-	-	-	40,820
Hospitals & Medical Care	2,800	8	-	-	-	-	-	-	-	-	2,808
Labour	-	-	-	-	-	-	328	-	-	-	328
Mental Health Research Fund	320	-	-	-	-	-	-	-	-	-	320
Municipal Affairs	730	370	-	-	-	90	35	-	20	-	1,245
AOSTRA	36,000	3,519	10	-	-	-	-	-	-	-	39,529
Recreation & Parks	-	-	-	-	62	-	-	-	-	-	62
Technology, Research & Telecommunications	45,150	170	-	-	-	530	1,440	-	20	-	47,310
Transportation & Utilities	1,273	60	30	-	5,867	960	300	-	-	875	9,365
TOTAL	**151,052**	**7,271**	**393**	**55**	**18,401**	**7,716**	**5,899**	**1,833**	**139**	**1,229**	**193,988**

(1) Administration of extramural programs.

TABLE 41. Total Expenditures on R&D in the Natural Sciences by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Agriculture	6,957	214	2,569	-	107	2,141	11,988
Community & Occupational Health	75	-	252	-	25	17	369
Culture	-	-	-	-	-	-	-
Energy	296	4,051	468	-	630	16	5,461
Environment	83	303	-	-	90	-	476
Environmental Centre	4,932	810	-	-	300	-	6,042
Forestry, Lands & Wildlife	1,440	1,073	310	-	362	152	3,337
Alberta Heritage Foundation for Medical Research	1,479	-	36,881	-	-	2,243	40,603
Hospitals & Medical Care	8	-	1,027	824	949	-	2,808
Mental Health Research Fund	-	-	320	-	-	-	320
Municipal Affairs	470	630	-	-	-	-	1,100
AOSTRA	3,529	26,926	3,540	-	4,791	743	39,529
Technology, Research & Telecommunications	170	14,350	10,170	-	20,630	-	45,320
Transportation & Utilities	670	214	140	-	300	39	1,363
TOTAL	**20,109**	**48,571**	**55,677**	**824**	**28,184**	**5,351**	**158,716**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 42. Departmental Personnel Engaged in Scientific Activities in the Natural Sciences by Department or Agency, 1988-89e

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Agriculture	59	83	-	142	115	156	-	271
Community & Occupational Health	1	-	-	1	-	-	-	-
Culture	-	-	-	-	12	18	3	33
Energy	-	-	-	-	-	-	-	-
Environment	-	-	-	-	11	23	3	37
Environmental Centre	26	52	21	99	37	61	32	130
Forestry, Lands & Wildlife	17	7	4	28	19	17	-	36
Alberta Heritage Foundation Medical Research	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-
Labour	-	-	-	-	7	-	-	7
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	1	-	1	2	1	-	1	2
AOSTRA	-	-	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	1	-	1
Technology, Research & Telecommunications	-	-	-	-	5	-	-	5
Transportation & Utilities	7	3	3	13	34	80	52	166
TOTAL	**111**	**145**	**29**	**285**	**241**	**356**	**91**	**688**

TABLE 42. Departmental Personnel Engaged in Scientific Activities in the Natural Sciences by Department or Agency, 1988-89e - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Agriculture	2	2	8	12	176	241	8	425
Community & Occupational Health	1	-	-	1	2	-	-	2
Culture	-	-	-	-	12	18	3	33
Energy	5	-	3	8	5	-	3	8
Environment	2	-	2	4	13	23	5	41
Environmental Centre	1	-	1	2	64	113	54	231
Forestry, Lands & Wildlife	4	-	1	5	40	24	5	69
Alberta Heritage Foundation Medical Research	4	-	10	14	4	-	10	14
Hospitals & Medical Care	-	-	-	-	-	-	-	-
Labour	-	-	-	-	7	-	-	7
Mental Health Research Fund	-	-	-	-	-	-	-	-
Municipal Affairs	4	-	2	6	6	-	4	10
AOSTRA	33	-	19	52	33	-	19	52
Recreation & Parks	-	-	-	-	-	1	-	1
Technology, Research & Telecommunications	3	-	1	4	8	-	1	9
Transportation & Utilities	1	1	-	2	42	84	55	181
TOTAL	**60**	**3**	**47**	**110**	**412**	**504**	**167**	**1,083**

TABLE 43. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1988-89e

Department or agency	Advancement of science	Energy and fuels				Environmental issues			
		Conservation	Fossil fuels	Renewable resources	Other	Air	Land	Water	Other
	($'000)								
Agriculture	-	-	-	-	-	-	-	-	-
Community & Occupational Health	-	-	-	-	-	-	-	-	-
Culture	-	-	-	-	-	-	-	-	-
Energy	468	348	5,392	40	-	-	-	-	-
Environment	-	-	-	-	-	-	349	905	1,236
Environmental Centre	-	146	-	-	-	1,026	207	1,727	749
Forestry, Lands & Wildlife	-	-	-	-	-	-	118	-	-
Alberta Heritage Foundation for Medical Research	-	-	-	-	-	-	-	-	-
Hospitals & Medical Care	-	-	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-	-	-
Mental Health Research Fund	-	-	-	-	-	-	-	-	-
Municipal Affairs	-	-	-	-	1,245	-	-	-	-
AOSTRA	8,331	-	31,198	-	-	-	-	-	-
Recreation & Parks	-	-	-	-	-	-	-	-	50
Technology, Research & Telecommunications	-	-	-	-	-	-	-	-	-
Transportation & Utilities	-	-	-	-	-	-	-	-	-
TOTAL	**8,799**	**494**	**36,590**	**40**	**1,245**	**1,026**	**674**	**2,632**	**2,035**

TABLE 43. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1988-89e - Continued

Department or agency	Health	Industrial and economic development				
		Agriculture	Fisheries	Forestry	Manufacturing	Other
	($'000)					
Agriculture	-	21,408	-	-	-	-
Community & Occupational Health	379	-	-	-	-	-
Culture	-	-	-	-	-	-
Energy	-	-	-	-	-	-
Environment	-	-	-	-	-	2,063
Environmental Centre	3,875	2,542	146	149	-	416
Forestry, Lands & Wildlife	-	-	362	4,650	-	100
Alberta Heritage Foundation for Medical Research	40,820	-	-	-	-	-
Hospitals & Medical Care	2,808	-	-	-	-	-
Labour	-	-	-	-	-	328
Mental Health Research Fund	320	-	-	-	-	-
Municipal Affairs	-	-	-	-	-	-
AOSTRA	-	-	-	-	-	-
Recreation & Parks	12	-	-	-	-	-
Technology, Research & Telecommunications	-	-	-	-	47,310	-
Transportation & Utilities	-	-	-	-	-	-
TOTAL	**48,214**	**23,950**	**508**	**4,799**	**47,310**	**2,907**

TABLE 43. Objectives of Expenditures in the Natural Sciences by Department or Agency, 1988-89e - Concluded

Department or agency	Culture, sport and recreation	Transportation	Wildlife	Total
	($'000)			
Agriculture	-	-	-	21,408
Community & Occupational Health	-	-	-	379
Culture	1,833	-	-	1,833
Energy	-	-	-	6,248
Environment	-	-	-	4,553
Environmental Centre	722	-	-	11,705
Forestry, Lands & Wildlife	-	-	845	6,075
Alberta Heritage Foundation for Medical Research	-	-	-	40,820
Hospitals & Medical Care	-	-	-	2,808
Labour	-	-	-	328
Mental Health Research Fund	-	-	-	320
Municipal Affairs	-	-	-	1,245
AOSTRA	-	-	-	39,529
Recreation & Parks	-	-	-	62
Technology, Research & Telecommunications	-	-	-	47,310
Transportation & Utilities	-	9,365	-	9,365
TOTAL	2,555	9,365	845	193,988

TABLE 44. Objectives of Expenditures in the Natural Sciences by Activity, 1988-89e

Objective	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	($'000)				
Advancement of science	-	-	8,799	-	8,799
Energy and fuels:					
Conservation	191	25	278	-	494
Fossil fuels	3,750	144	32,088	608	36,590
Renewable resources	30	10	-	-	40
Other	470	105	630	40	1,245
Environmental issues:					
Air	377	379	270	-	1,026
Land	183	119	372	-	674
Water	249	1,708	505	170	2,632
Other	753	44	88	1,150	2,035
Health	2,567	2,522	42,908	217	48,214
Industrial and economic development:					
Agriculture	7,982	9,225	5,031	1,712	23,950
Fisheries	247	226	21	14	508
Forestry	1,252	1,922	1,625	-	4,799
Manufacturing	170	190	45,150	1,800	47,310
Other	416	1,528	100	863	2,907
Social development and related areas:					
Culture, sport and recreation	566	1,849	-	140	2,555
Transportation	670	8,002	693	-	9,365
Wildlife	236	527	49	33	845
TOTAL	20,109	28,525	138,607	6,747	193,988

Social Sciences and Humanities

TABLE 45. Total Expenditures in the Social Sciences and Humanities, by Activity 1981-82 to 1988-89

Activity	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Research and development								
Current expenditures:								
In-house	669	237	657	1,263	1,265	3,727	363	194
Contracts	564	406	551	436	619	1,375	502	281
Grants	1,028	1,038	1,228	1,042	1,727	1,367	1,217	873
Research fellowships	4	23	30	5	20	21	111	102
Administration of extramural R&D programs	...	...	...	...	...	...	349	119
Sub-total	2,265	1,704	2,466	2,746	3,631	6,490	2,542	1,569
Capital expenditures	3	10	2	2	3	45	31	3
Related scientific activities								
Current expenditures	25,604	38,546	40,732	39,579	46,460	35,960	27,311	29,926
Administration of extramural RSA programs	...	...	...	...	...	...	298	444
Sub-total	25,604	38,546	40,732	39,579	46,460	35,960	27,609	30,370
Capital expenditures	39	3,578	5,641	9,734	4,731	1,940	1,165	1,145
TOTAL	27,911	43,838	48,841	52,061	54,825	44,435	31,347	33,087

TABLE 46. Total Expenditures in the Social Sciences and Humanities by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Advanced Education	...	...	1,354	1,639	2,150	1,783	1,561	1,075
Advanced Education & Manpower	2,344	2,612	...	...	...	...	...	...
Alcoholism & Drug Abuse Commission	497	264	320	308	524	584	396	428
Attorney General	290	290	436	407	363	363	326	300
Career Development & Employment	...	...	...	...	...	1,863	1,716	1,631
Community & Occupational Health	...	...	...	...	...	866	948	580
Consumer & Corporate Affairs	120	143	172	157	154	174	191	135
Culture(1)	2,332e	16,480	21,515	25,736	20,736	16,973	5,600	5,600
Economic Development	5,857	4,093	3,374	3,180	4,418	...	...	...
Economic Development & Trade	...	...	...	...	...	5,740	5,391	5,827
Education	3,050	3,617e	2,724	3,019	3,068	2,507	1,728	2,153
Educational Communications Corporation ACCESS	182e	200e	398	350	350	350	385	398
Environment	557	508	232	123	515	549	92	78
Environment Council	1,321	1,243	1,525	1,176	1,060	1,245	1,016	1,096
Hospitals & Medical Care	2,091	2,637	2,460	2,480	2,500	2,610	2,619	2,805
Housing	...	805	739	850	1,316	...	...	...
Housing & Public Works	480	...	...	...	...	...	...	...
Labour	462	557	564	591	729	684	614	587
Manpower	...	...	1,539	1,412	1,999	...	...	...
Mental Health Research Fund	183	193	345	311	351	293	304	304
Municipal Affairs	1,184	1,408	1,577	1,037	870	2,311	2,411	2,990
Recreation & Parks	306	511	207	494	250	342	392	404
Social Services	...	...	...	...	...	421	579	447
Social Services & Community Health	933	400	463	507	5,481	...	...	...
Solicitor General	1,754	3,478	4,434	4,521	2,234	1,617	1,892	2,770
Tourism	...	...	...	...	...	637	759	761
Tourism & Small Business	1,246	1,597	1,058	713	882	...	...	...
Transportation & Utilities	–	–	377	233	1,571	256	418	632
Treasury	2,085	1,994	2,097	2,094	2,172	2,267	2,009	2,086
Workers' Health, Safety & Compensation	637	808	931	723	1,132	...	...	...
TOTAL	**27,911**	**43,838**	**48,841**	**52,061**	**54,825**	**44,435**	**31,347**	**33,087**

(1) Revisions available only as of 1982-83.

TABLE 47. Total Expenditures in the Social Sciences and Humanities by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Intramural	17,991	31,396	36,057	42,542	37,096	33,150	24,430	25,083
Industry	7,158	9,050	8,709	5,636	10,540	6,323	3,160	4,583
Universities	1,637	1,859	1,658	2,094	3,533	1,772	1,939	1,235
Hospitals and health organizations	171	111	213	114	381	231	123	150
Alberta Research Council(1)	5	5	5	5	86	17	53	35
Other	949	1,417	2,199	1,670	3,189	2,942	1,642	2,001
TOTAL	27,911	43,838	48,841	52,061	54,825	44,435	31,347	33,087

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 48. Total Expenditures on R&D in the Social Sciences and Humanities by Performer, 1981-82 to 1988-89

Performer	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Intramural	672	300	683	1,265	1,268	3,772	853	423
Industry	440	521	423	331	411	651	75	7
Universities	756	643	1,023	814	1,300	1,042	1,297	855
Hospitals and health organizations	171	111	213	114	381	231	123	150
Alberta Research Council(1)	5	5	5	5	20	-	48	30
Other	224	134	121	219	254	839	177	107
TOTAL	2,268	1,714	2,468	2,748	3,634	6,535	2,573	1,572

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 49. Total Expenditures on R&D in the Social Sciences and Humanities by Department or Agency, 1981-82 to 1988-89

Department or agency	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	($'000)							
Advanced Education	-	-	19	65	488	462	472	324
Alcoholism & Drug Abuse Commission	7	7	1	1	-	-	-	18
Attorney General	290	290	436	407	363	363	326	300
Community & Occupational Health	...	...	...	...	...	159	266	...
Culture	594e	296	773	1,464	1,464	3,720	-	-
Education	384	295e	302	324	526	1,376	753	273
Educational Communications Corporation ACCESS	6e	7e	-	31	31	31	-	-
Environment	45	-	-	-	-	-	-	-
Hospitals & Medical Care	446	111	111	111	111	111	214	116
Housing	...	385	-	-	-	...	...	...
Housing & Public Worls	100	...	...	...	...	...	...	...
Manpower	...	...	90	-	-	...	...	...
Mental Health Research Fund	183	193	345	311	351	293	304	304
Municipal Affairs & Housing	105	68	53	-	-	...	...	...
Social Services	...	...	...	...	...	20	190	207
Tourism	...	...	...	...	...	-	48	20
Treasury	61	-	-	-	-	-	-	-
Workers' Health, Safety & Compensation	47	62	338	34	300	...	...	...
TOTAL	**2,268**	**1,714**	**2,468**	**2,748**	**3,634**	**6,535**	**2,573**	**1,572**

TABLE 50. Departmental Personnel Engaged in Scientific Activities in the Social Sciences and Humanities, by Activity and Category, 1981-82 to 1988-89

Activity and category	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
	(person-years)							
Research & development:								
Scientific & professional	27	24	16	36	36	44	4	5
Technical	2	2	-	1	1	5	-	1
Other	7	3	5	2	2	4	-	-
Sub-total	36	29	21	39	39	53	4	6
Related scientific activities:								
Scientific & professional	232	261	298	405	384	306	258	256
Technical	71	66	56	198	175	95	121	117
Other	108	103	131	188	168	107	103	108
Sub-total	461	430	485	791	727	508	482	481
Administration of extramural programs:								
Scientific & professional	...	...	...	...	...	...	8	9
Technical	...	...	...	...	...	...	-	-
Other	...	...	...	...	...	...	8	5
Sub-total	...	...	...	...	...	...	16	14
Total scientific activities:								
Scientific & professional	309	285	314	441	420	350	270	270
Technical	73	68	56	199	176	100	121	118
Other	115	106	136	190	170	111	111	113
TOTAL	497	459	506	830	766	561	502	501

TABLE 51. Total Expenditures in the Social Sciences and Humanities by Department or Agency and Sources of Funds, 1987-88

Department or agency	Departmental budget	Other departments	Federal government	Trust funds	Other sources	Total
	($'000)					
Advanced Education	1,561	-	-	-	-	1,561
Alcoholism & Drug Abuse Commission	396	-	-	-	-	396
Attorney General	326	-	-	-	-	326
Career Development & Employment	1,716	-	-	-	-	1,716
Community & Occupational Health	530	55	-	212	151	948
Consumer & Corporate Affairs	191	-	-	-	-	191
Culture	5,600	-	-	-	-	5,600
Economic Development and Trade	5,391	-	-	-	-	5,391
Education	1,728	-	-	-	-	1,728
Educational Communications Corporation ACCESS	385	-	-	-	-	385
Environment	92	-	-	-	-	92
Environment Council	1,016	-	-	-	-	1,016
Hospitals & Medical Care	2,619	-	-	-	-	2,619
Labour	614	-	-	-	-	614
Mental Health Research Fund	-	304	-	-	-	304
Municipal Affairs	2,411	-	-	-	-	2,411
Recreation & Parks	392	-	-	-	-	392
Social Services	579	-	-	-	-	579
Solicitor General	1,892	-	-	-	-	1,892
Tourism	740	-	19	-	-	759
Transportation & Utilities	418	-	-	-	-	418
Treasury	2,009	-	-	-	-	2,009
TOTAL	**30,606**	**359**	**19**	**212**	**151**	**31,347**

TABLE 52. Total Expenditures in the Social Sciences and Humanities by Activity and Performer, 1987-88

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	363	...	...	...	...	...	363
Contracts	110	75	92	-	48	177	502
Grants	-	-	1,166	51	-	-	1,217
Research fellowships	-	-	39	72	-	-	111
Administration of extramural R&D programs	349	...	...	...	...	...	349
Sub-total	822	75	1,297	123	48	177	2,542
Capital Expenditures	31	...	...	...	...	...	31
Related scientific activities							
Current expenditures	22,114	3,085	642	-	5	1,465	27,311
Administration of extramural RSA programs	298	...	...	...	...	...	298
Sub-total	22,412	3,085	642	-	5	1,465	27,609
Capital expenditures	1,165	...	...	...	...	...	1,165
TOTAL	24,438	3,160	1,939	123	53	1,642	31,347

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 53. Total Expenditures in the Social Sciences and Humanities by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	532	30	849	51	-	99	1,561
Alcoholism & Drug Abuse Commission	396	-	-	-	-	-	396
Attorney General	-	-	326	-	-	-	326
Career Development & Employment	1,227	276	-	-	-	213	1,716
Community & Occupational Health	583	86	279	-	-	-	948
Consumer & Corporate Affairs	85	67	-	-	-	39	191
Culture	5,047	-	-	-	-	553	5,600
Economic Development & Trade	4,143	1,129	24	-	5	90	5,391
Education	1,294	118	118	-	-	198	1,728
Educational Communications Corporation ACCESS	311	74	-	-	-	-	385
Environment	6	86	-	-	-	-	92
Environment Council	1,016	-	-	-	-	-	1,016
Hospitals & Medical Care	2,330	165	39	72	-	13	2,619
Labour	614	-	-	-	-	-	614
Mental Health Research Fund	-	-	304	-	-	-	304
Municipal Affairs	2,367	8	-	-	-	36	2,411
Recreation & Parks	315	77	-	-	-	-	392
Social Services	290	133	-	-	-	156	579
Solicitor General	1,464	428	-	-	-	-	1,892
Tourism	391	320	-	-	48	-	759
Transportation & Utilities	10	163	-	-	-	245	418
Treasury	2,009	-	-	-	-	-	2,009
TOTAL	**24,430**	**3,160**	**1,939**	**123**	**53**	**1,642**	**31,347**

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 54. Total Expenditures in the Social Sciences and Humanities by Department or Agency and Activity, 1987-88

Department or agency	Research and development			Related scientific activities			Total
	Current	AEP(1)	Capital	Current	AEP(1)	Capital	
	($'000)						
Advanced Education	402	70	-	980	109	-	1,561
Alcoholism & Drug Abuse Commission	-	-	-	396	-	-	396
Attorney General	326	-	-	-	-	-	326
Career Development & Employment	-	-	-	1,701	-	15	1,716
Community & Occupational Health	239	27	-	675	-	7	948
Consumer & Corporate Affairs	-	-	-	181	10	-	191
Culture	-	-	-	4,611	-	989	5,600
Economic Development & Trade	-	-	-	5,304	30	57	5,391
Education	560	162	31	870	87	18	1,728
Educational Communications Corporation ACCESS	-	-	-	335	-	50	385
Environment	-	-	-	86	6	-	92
Environment Council	-	-	-	1,016	-	-	1,016
Hospitals & Medical Care	124	90	-	2,394	11	-	2,619
Labour	-	-	-	614	-	-	614
Mental Health Research Fund	304	-	-	-	-	-	304
Municipal Affairs	-	-	-	2,411	-	-	2,411
Recreation & Parks	-	-	-	357	35	-	392
Social Services	190	-	-	389	-	-	579
Solicitor General	-	-	-	1,892	-	-	1,892
Tourism	48	-	-	711	-	-	759
Transportation & Utilities	-	-	-	408	10	-	418
Treasury	-	-	-	1,980	-	29	2,009
TOTAL	2,193	349	31	27,311	298	1,165	31,347

(1) Administration of extramural programs.

TABLE 55. Total Expenditures on R&D in the Social Sciences and Humanities by Department or Agency and Performer, 1987-88

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	70	-	351	51	-	-	472
Attorney General	-	-	326	-	-	-	326
Community & Occupational Health	27	50	189	-	-	-	266
Education	476	25	88	-	-	164	753
Hospitals & Medical Care	90	-	39	72	-	13	214
Mental Health Research Fund	-	-	304	-	-	-	304
Social Services	190	-	-	-	-	-	190
Tourism	-	-	-	-	48	-	48
TOTAL	853	75	1,297	123	48	177	2,573

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 56. Intramural Expenditures in the Social Sciences and Humanities by Department or Agency and Type of Expenditure, 1987-88

Department or agency	Current expenditures		Capital expenditures	Total
	Personnel costs	Other costs		
	($'000)			
Advanced Education	506	26	-	532
Alcoholism & Drug Abuse Commission	286	110	-	396
Attorney General	-	-	-	-
Career Development & Employment	1,172	40	15	1,227
Community & Occupational Health	431	145	7	583
Consumer & Corporate Affairs	75	10	-	85
Culture	2,610	1,448	989	5,047
Economic Development & Trade	2,025	2,061	57	4,143
Education	1,158	87	49	1,294
Educational Communications Corporation ACCESS	230	31	50	311
Environment	6	-	-	6
Environment Council	797	219	-	1,016
Hospitals & Medical Care	1,230	1,100	-	2,330
Labour	486	128	-	614
Mental Health Research Fund	-	-	-	-
Municipal Affairs	1,992	375	-	2,367
Recreation & Parks	280	35	-	315
Social Services	179	111	-	290
Solicitor General	1,464	-	-	1,464
Tourism	368	23	-	391
Transportation & Utilities	10	-	-	10
Treasury	1,357	623	29	2,009
TOTAL	**16,662**	**6,572**	**1,196**	**24,438**

TABLE 57. Departmental Personnel Engaged in Scientific Activities in the Social Sciences and Humanities by Department or Agency, 1987-88

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	-	-	-	-	9	-	1	10
Alcoholism & Drug Abuse Commission	-	-	-	-	6	2	1	9
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	6	30
Community & Occupational Health	-	-	-	-	6	2	2	10
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	29	47	40	116
Economic Development & Trade	-	-	-	-	48	1	5	54
Education	2	-	-	2	9	3	3	15
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Environment	-	-	-	-	-	-	-	-
Environment Council	-	-	-	-	10	3	7	20
Hospitals & Medical Care	-	-	-	-	20	4	8	32
Labour	-	-	-	-	6	1	10	17
Municipal Affairs	-	-	-	-	41	6	10	57
Recreation & Parks	-	-	-	-	5	2	-	7
Social Services	2	-	-	2	3	1	-	4
Solicitor General	-	-	-	-	10	37	-	47
Tourism	-	-	-	-	8	2	2	12
Treasury	-	-	-	-	26	2	7	35
TOTAL	4	-	-	4	258	121	103	482

TABLE 57. Departmental Personnel Engaged in Scientific Activities in the Social Sciences and Humanities by Department or Agency, 1987-88 - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	2	-	2	4	11	-	3	14
Alcoholism & Drug Abuse Commission	-	-	-	-	6	2	1	9
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	6	30
Community & Occupational Health	-	-	1	1	6	2	3	11
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	29	47	40	116
Economic Development & Trade	-	-	2	2	48	1	7	56
Education	3	-	2	5	14	3	5	22
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Environment	-	-	-	-	-	-	-	-
Environment Council	-	-	-	-	10	3	7	20
Hospitals & Medical Care	2	-	1	3	22	4	9	35
Labour	-	-	-	-	6	1	10	17
Municipal Affairs	-	-	-	-	41	6	10	57
Recreation & Parks	1	-	-	1	6	2	-	8
Social Services	-	-	-	-	5	1	-	6
Solicitor General	-	-	-	-	10	37	-	47
Tourism	-	-	-	-	8	2	2	12
Treasury	-	-	-	-	26	2	7	35
TOTAL	**8**	**-**	**8**	**16**	**270**	**121**	**111**	**502**

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1987-88

Department or agency	Advancement of science	Communications	Environmental issues	
			Water	Other
	($'000)			
Advanced Education	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-
Attorney General	-	-	-	-
Career Development & Employment	-	-	-	-
Community & Occupational Health	-	-	-	-
Consumer & Corporate Affairs	-	-	-	-
Culture	-	-	-	-
Economic Development & Trade	-	-	-	-
Education	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-
Environment	-	-	72	20
Environment Council	-	-	-	1,016
Hospitals & Medical Care	-	-	-	-
Labour	-	-	-	-
Mental Health Research Fund	-	-	-	-
Municipal Affairs	-	-	-	-
Recreation & Parks	-	-	-	-
Social Services	-	-	-	-
Solicitor General	-	-	-	-
Tourism	-	-	-	-
Transportation & Utilities	-	-	-	-
Treasury	-	-	-	-
TOTAL	-	-	72	1,036

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1987-88 - Continued

Department or agency	Health	Industrial and economic development		
		Agriculture	Manufacturing	Other
	($'000)			
Advanced Education	246	-	-	-
Alcoholism & Drug Abuse Commission	396	-	-	-
Attorney General	-	-	-	-
Career Development & Employment	-	-	-	-
Community & Occupational Health	948	-	-	-
Consumer & Corporate Affairs	-	-	-	-
Culture	-	-	-	-
Economic Development & Trade	-	-	1,830	2,578
Education	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-
Environment	-	-	-	-
Environment Council	-	-	-	-
Hospitals & Medical Care	2,619	-	-	-
Labour	-	-	-	-
Mental Health Research Fund	304	-	-	-
Municipal Affairs	-	-	-	-
Recreation & Parks	-	-	-	-
Social Services	-	-	-	-
Solicitor General	-	-	-	-
Tourism	-	-	-	-
Transportation & Utilities	-	-	-	-
Treasury	-	-	-	-
TOTAL	4,513	-	1,830	2,578

TABLE 58. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1987-88 - Concluded

Department or agency	Social development					Transportation	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other		
	($'000)						
Advanced Education	-	1,228	87	-	-	-	1,561
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	396
Attorney General	-	-	-	-	326	-	326
Career Development & Employment	-	-	1,716	-	-	-	1,716
Community & Occupational Health	-	-	-	-	-	-	948
Consumer & Corporate Affairs	-	-	-	-	191	-	191
Culture	5,600	-	-	-	-	-	5,600
Economic Development & Trade	26	-	-	-	-	957	5,391
Education	-	1,728	-	-	-	-	1,728
Educational Communications Corporation ACCESS	-	385	-	-	-	-	385
Environment	-	-	-	-	-	-	92
Environment Council	-	-	-	-	-	-	1,016
Hospitals & Medical Care	-	-	-	-	-	-	2,619
Labour	-	-	614	-	-	-	614
Mental Health Research Fund	-	-	-	-	-	-	304
Municipal Affairs	-	-	-	2,411	-	-	2,411
Recreation & Parks	392	-	-	-	-	-	392
Social Services	-	107	90	-	382	-	579
Solicitor General	-	-	-	-	1,892	-	1,892
Tourism	-	-	-	-	759	-	759
Transportation & Utilities	-	-	-	-	-	418	418
Treasury	-	-	-	-	2,009	-	2,009
TOTAL	6,018	3,448	2,507	2,411	5,559	1,375	31,347

TABLE 59. Objectives of Expenditures in the Social Sciences and Humanities by Activity, 1987-88

Objective	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	($'000)				
Environmental issues:					
Water	-	3	-	69	72
Other	-	1,019	-	17	1,036
Health	117	3,228	877	291	4,513
Industrial and economic development:					
Manufacturing	-	1,684	-	146	1,830
Other	-	1,643	-	935	2,578
Social development:					
Culture, sport and recreation	-	5,362	-	656	6,018
Education	546	1,542	469	891	3,448
Human resources	80	1,854	-	573	2,507
Urban and regional studies	-	2,367	-	44	2,411
Other	110	4,069	374	1,026	5,559
Transportation	-	826	-	549	1,375
TOTAL	**853**	**23,577**	**1,720**	**5,197**	**31,347**

TABLE 60. Total Expenditures in the Social Sciences and Humanities by Activity and Performer, 1988-89e

Activity	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Research and development							
Current expenditures:							
In-house	194	...	...	...	...	...	194
Contracts	107	7	30	-	30	107	281
Grants	-	-	825	48	-	-	873
Research fellowships	-	-	-	102	-	-	102
Administration of extramural R&D programs	119	...	...	...	...	...	119
Sub-total	420	7	855	150	30	107	1,569
Capital expenditures	3	...	...	...	...	...	3
Related scientific activities							
Current expenditures	23,071	4,576	380	-	5	1,894	29,926
Administration of extramural RSA programs	444	..	...	...	...	...	444
Sub-total	23,515	4,576	380	-	5	1,894	30,370
Capital expenditures	1,145	...	...	...	...	...	1,145
TOTAL	25,083	4,583	1,235	150	35	2,001	33,087

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 61. Total Expenditures in the Social Sciences and Humanities by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	528	30	413	48	-	56	1,075
Alcoholism & Drug Abuse Commission	428	-	-	-	-	-	428
Attorney General	-	-	300	-	-	-	300
Career Development & Employment	1,130	275	-	-	-	226	1,631
Community & Occupational Health	486	24	70	-	-	-	580
Consumer & Corporate Affairs	75	30	-	-	-	30	135
Culture	5,047	-	-	-	-	553	5,600
Economic Development & Trade	4,718	1,000	20	-	5	84	5,827
Education	1,376	337	128	-	-	312	2,153
Educational Communications Corporation ACCESS	329	69	-	-	-	-	398
Environment	6	72	-	-	-	-	78
Environment Council	1,096	-	-	-	-	-	1,096
Hospitals & Medical Care	2,203	500	-	102	-	-	2,805
Labour	587	-	-	-	-	-	587
Mental Health Research Fund	-	-	304	-	-	-	304
Municipal Affairs	2,464	140	-	-	-	386	2,990
Recreation & Parks	304	100	-	-	-	-	404
Social Services	307	-	-	-	-	140	447
Solicitor General	1,510	1,260	-	-	-	-	2,770
Tourism	393	338	-	-	30	-	761
Transportation & Utilities	10	408	-	-	-	214	632
Treasury	2,086	-	-	-	-	-	2,086
TOTAL	25,083	4,583	1,235	150	35	2,001	33,087

(1) Includes only annual funding by Government of Alberta - other funds are not included.

TABLE 62. Total Expenditures in the Social Sciences and Humanities by Department or Agency and Activity, 1988-89e

Department or agency	Research and development			Related scientific activities			Total
	Current	AEP(1)	Capital	Current	AEP(1)	Capital	
	($'000)						
Advanced Education	269	55	-	666	85	-	1,075
Alcoholism & Drug Abuse Commission	18	-	-	410	-	-	428
Attorney General	300	-	-	-	-	-	300
Career Development & Employment	-	-	-	1,608	-	23	1,631
Community & Occupational Health	-	-	-	573	-	7	580
Consumer & Corporate Affairs	-	-	-	130	5	-	135
Culture	-	-	-	4,611	-	989	5,600
Economic Development & Trade	-	-	-	5,724	35	68	5,827
Education	220	50	3	1,670	198	12	2,153
Educational Communications Corporation ACCESS	-	-	-	382	-	16	398
Environment	-	-	-	72	6	-	78
Environment Council	-	-	-	1,096	-	-	1,096
Hospitals & Medical Care	102	14	-	2,618	71	-	2,805
Labour	-	-	-	587	-	-	587
Mental Health Research Fund	304	-	-	-	-	-	304
Municipal Affairs	-	-	-	2,990	-	-	2,990
Recreation & Parks	-	-	-	370	34	-	404
Social Services	207	-	-	240	-	-	447
Solicitor General	-	-	-	2,770	-	-	2,770
Tourism	30	-	-	731	-	-	761
Transportation & Utilities	-	-	-	622	10	-	632
Treasury	-	-	-	2,056	-	30	2,086
TOTAL	**1,450**	**119**	**3**	**29,926**	**444**	**1,145**	**33,087**

(1) Administration of extramural programs.

TABLE 63. Total Expenditures on R&D in the Social Sciences and Humanities by Department or Agency and Performer, 1988-89e

Department or agency	Intramural	Industry	Universities	Hospitals and health organizations	Alberta Research Council(1)	Other	Total
	($'000)						
Advanced Education	55	-	221	48	-	-	324
Alcoholism & Drug Abuse Commission	18	-	-	-	-	-	18
Attorney General	-	-	300	-	-	-	300
Education	129	7	30	-	-	107	273
Hospitals & Medical Care	14	-	-	102	-	-	116
Mental Health Research Fund	-	-	304	-	-	-	304
Social Services	207	-	-	-	-	-	207
Tourism	-	-	-	-	30	-	30
TOTAL	423	7	855	150	30	107	1,572

(1) Includes only annual funding by the Government of Alberta - other funds are not included.

TABLE 64. Departmental Personnel Engaged in Scientific Activities in the Social Sciences and Humanities by Department or Agency, 1988-89e

Department or agency	Research and development				Related scientific activities			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	-	-	-	-	9	-	2	11
Alcoholism & Drug Abuse Commission	-	1	-	1	6	3	1	10
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	7	31
Community & Occupational Health	-	-	-	-	6	2	2	10
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	29	47	40	116
Economic Development & Trade	-	-	-	-	48	1	4	53
Education	2	-	-	2	9	3	3	15
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Environment	-	-	-	-	-	-	-	-
Environment Council	-	-	-	-	10	3	7	20
Hospitals & Medical Care	-	-	-	-	19	4	8	31
Labour	-	-	-	-	5	1	9	15
Municipal Affairs	-	-	-	-	42	-	16	58
Recreation & Parks	-	-	-	-	5	3	-	8
Social Services	3	-	-	3	3	1	-	4
Solicitor General	-	-	-	-	10	37	-	47
Tourism	-	-		-	8	2	2	12
Treasury	-	-	-	-	25	2	6	33
TOTAL	5	1	-	6	256	117	108	481

TABLE 64. Departmental Personnel Engaged in Scientific Activities in the Social Sciences and Humanities by Department or Agency, 1988-89e - Concluded

Department or agency	Administration of extramural programs				Total			
	Scientific and professional	Technical	Other	Total	Scientific and professional	Technical	Other	Total
	(person-years)							
Advanced Education	2	-	1	3	11	-	3	14
Alcoholism & Drug Abuse Commission	-	-	-	-	6	4	1	11
Attorney General	-	-	-	-	-	-	-	-
Career Development & Employment	-	-	-	-	18	6	7	31
Community & Occupational Health	-	-	-	-	6	2	2	10
Consumer & Corporate Affairs	-	-	-	-	1	1	-	2
Culture	-	-	-	-	29	47	40	116
Economic Development & Trade	-	-	2	2	48	1	6	55
Education	3	-	1	4	14	3	4	21
Educational Communications Corporation ACCESS	-	-	-	-	3	1	1	5
Environment	-	-	-	-	-	-	-	-
Environment Council	-	-	-	-	10	3	7	20
Hospitals & Medical Care	1	-	1	2	20	4	9	33
Labour	-	-	-	-	5	1	9	15
Municipal Affairs	2	-	-	2	44	-	16	60
Recreation & Parks	1	-	-	1	6	3	-	9
Social Services	-	-	-	-	6	1	-	7
Solicitor General	-	-	-	-	10	37	-	47
Tourism	-	-	-	-	8	2	2	12
Treasury	-	-	-	-	25	2	6	33
TOTAL	9	-	5	14	270	118	113	501

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TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1988-89e

Department or agency	Advancement of science	Communications	Environmental issues	
			Water	Other
	($'000)			
Advanced Education	-	-	-	-
Alcoholism & Drug Abuse Commission	-	-	-	-
Attorney General	-	-	-	-
Career Development & Employment	-	-	-	-
Community & Occupational Health	30	-	-	-
Consumer & Corporate Affairs	-	-	-	-
Culture	-	-	-	-
Economic Development & Trade	-	-	-	-
Education	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-
Environment	-	-	49	29
Environment Council	-	-	-	1,096
Hospitals & Medical Care	-	-	-	-
Labour	-	-	-	-
Mental Health Research Fund	-	-	-	-
Municipal Affairs	-	-	-	-
Recreation & Parks	-	-	-	-
Social Services	-	-	-	-
Solicitor General	-	-	-	-
Tourism	-	-	-	-
Transportation & Utilities	-	-	-	-
Treasury	-	-	-	-
TOTAL	30	-	49	1,125

TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1988-89e - Continued

Department or agency	Health	Industrial and economic development		
		Forestry	Manufacturing	Other
	($'000)			
Advanced Education	240	-	-	-
Alcoholism & Drug Abuse Commission	428	-	-	-
Attorney General	-	-	-	-
Career Development & Employment	-	-	-	-
Community & Occupational Health	550	-	-	-
Consumer & Corporate Affairs	-	-	-	-
Culture	-	-	-	-
Economic Development & Trade	-	-	2,038	2,692
Education	-	-	-	-
Educational Communications Corporation ACCESS	-	-	-	-
Environment	-	-	-	-
Environment Council	-	-	-	-
Hospitals & Medical Care	2,805	-	-	-
Labour	-	-	-	-
Mental Health Research Fund	304	-	-	-
Municipal Affairs	-	-	-	-
Recreation & Parks	-	-	-	-
Social Services	-	-	-	-
Solicitor General	-	-	-	-
Tourism	-	-	-	-
Transportation & Utilities	-	-	-	-
Treasury	-	-	-	-
TOTAL	4,327	-	2,038	2,692

TABLE 65. Objectives of Expenditures in the Social Sciences and Humanities by Department or Agency, 1988-89e - Concluded

Department or agency	Social development					Transportation	Other	Total
	Culture, sport and recreation	Education	Human resources	Urban and regional studies	Other			
	($'000)							
Advanced Education	-	796	39	-	-	-	-	1,075
Alcoholism & Drug Abuse Commission	-	-	-	-	-	-	-	428
Attorney General	-	-	-	-	300	-	-	300
Career Development & Employment	-	-	1,631	-	-	-	-	1,631
Community & Occupational Health	-	-	-	-	-	-	-	580
Consumer & Corporate Affairs	-	-	-	-	135	-	-	135
Culture	5,600	-	-	-	-	-	-	5,600
Economic Development & Trade	23	-	-	-	-	1,074	-	5,827
Education	-	2,153	-	-	-	-	-	2,153
Educational Communications Corporation ACCESS	-	398	-	-	-	-	-	398
Environment	-	-	-	-	-	-	-	78
Environment Council	-	-	-	-	-	-	-	1,096
Hospitals & Medical Care	-	-	-	-	-	-	-	2,805
Labour	-	-	587	-	-	-	-	587
Mental Health Research Fund	-	-	-	-	-	-	-	304
Municipal Affairs	-	-	-	2,750	240	-	-	2,990
Recreation & Parks	404	-	-	-	-	-	-	404
Social Services	-	120	80	-	207	40	-	447
Solicitor General	-	-	-	-	2,770	-	-	2,770
Tourism	-	-	-	-	761	-	-	761
Transportation & Utilities	-	-	-	-	-	632	-	632
Treasury	-	-	-	-	1,365	-	721	2,086
TOTAL	6,027	3,467	2,337	2,750	5,778	1,746	721	33,087

TABLE 66. Objectives of Expenditures in the Social Sciences and Humanities by Activity, 1988-89e

Objective	Intramural		Extramural		Total
	Research and development	Related scientific activities	Research and development	Related scientific activities	
	($'000)				
Advancement of science	-	30	-	-	30
Environmental issues:					
Water	-	2	-	47	49
Other	-	1,100	-	25	1,125
Health	32	3,095	606	594	4,327
Industrial and economic development:					
Manufacturing	-	1,909	-	129	2,038
Other	-	1,860	-	832	2,692
Social development:					
Culture, sport and recreation	-	5,351	-	676	6,027
Education	184	2,000	213	1,070	3,467
Human resources	80	1,726	-	531	2,337
Urban and regional studies	-	2,264	-	486	2,750
Other	107	3,643	330	1,698	5,778
Transportation	20	959	-	767	1,746
Other	-	721	-	-	721
TOTAL	423	24,660	1,149	6,855	33,087

APPENDIX

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DEFINITIONS

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of related scientific activities (RSA) which are considered in less detail.

R&D is creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humans, culture and society and the use of this stock of knowledge to devise new applications. It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

The major related scientific activities (RSA) are education support, technical surveys, statistical surveys, information services, special services and studies, and museum services. Education support, statistical surveys, and museum services are largely self-explanatory the other three are described below.

Technical surveys are activities directed towards the exploration and systematic description of the earth and its natural resources. The activities include the gathering, processing, collating and analysing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Information services are activities directed to recording, classifying, translating, and disseminating scientific and technological information (Technology Transfer) as well as information resulting from R&D in the social sciences or required in support of such R&D. Included are the operating of scientific and technical libraries, specialized libraries and archives, the publication of scientific journals and bibliographies, and the organization of scientific conferences. Grants for the publication of scholarly works are also included.

Special services and studies in the natural sciences are activities directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects. In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies, and demonstration projects.

Activities are either natural sciences or social sciences and humanities. Natural sciences consist of disciplines concerned with the understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, environmental, life and physical sciences. Social sciences and humanities include all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology and urban and regional studies.

Five performing sectors are identified besides the Alberta Research Council. Intramural refers to the provincial department or agency performing a scientific activity. Industry consists principally of private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another sector. Universities cover postsecondary educational institutions and affiliated teaching and research facilities. Hospitals and health organizations are health organizations such as the Heart Foundation and hospitals which do not belong to the university sector. Other includes non-resident performers of scientific activities funded by the provincial government, as well as recipients not covered elsewhere such as the Federal Government, other provincial departments and individuals.

Expenditures are either current or capital. Current expenditures include those costs for personnel, transportation and communications, information, professional and special services, rentals, purchased repair and upkeep, utilities, materials and supplies. Capital expenditures are those on the construction and acquisition of land, buildings, machinery and equipment. Total expenditures include current plus capital.

Alberta Departments Included in the Provincial Government Science Survey

1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
Advanced Education & Manpower	Advanced Education & Manpower	Advanced Education	Advanced Education	Advanced Education	Advanced Education	Advanced Education	Advanced Education
Agriculture	Agriculture	Agriculture	Agriculture	Agriculture	Agriculture	Agriculture	Agriculture
Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	Agricultural Research Trust	
Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission	Alcoholism & Drug Abuse Commission
Attorney General	Attorney General	Attorney General	Attorney General	Attorney General	Attorney General	Attorney General	Attorney General
					Career Development & Employment	Career Development & Employment	Career Development & Employment
					Community & Occupational Health	Community & Occupational Health	Community & Occupational Health
Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs	Consumer & Corporate Affairs
Culture	Culture	Culture	Culture	Culture	Culture	Culture	Culture
Economic Development	Economic Development	Economic Development	Economic Development	Economic Development	Economic Development & Trade	Economic Development & Trade	Economic Development & Trade
Education	Education	Education	Education	Education	Education	Education	Education
Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation	Education Communications Corporation
Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy and Natural Resources	Energy	Energy	Energy

Alberta Departments included in the Provincial Government Science Survey - Continued

1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
Environment	Environment	Environment	Environment	Environment	Environment	Environment	Environment
Environmental Cente	Environmental Centre	Environmental Centre	Environmental Centre	Environmental Centre	Environmental Centre	Environmental Centre	Environmental Centre
Environment Council	Environment Council	Environment Council	Environment Council	Environment Council	Environment Council	Environment Council	Environment Council
Executive Council	Executive Council	Executive Council	Executive Council	Executive Council			
					Forestry, Lands & Wildlife	Forestry, Lands & Wildlife	Forestry, Lands & Wildlife
					Alberta Hertage Foundation for Medical Research	Alberta Heritage Foundation for Medical Research	Alberta Heritage Foundation for Medical Research
Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care	Hospitals & Medical Care
Housing and Public Works	Housing	Housing	Housing	Housing			
Labour	Labour	Labour	Labour	Labour	Labour	Labour	Labour
		Manpower	Manpower	Manpower			
Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund	Mental Health Research Fund
Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs	Municipal Affairs

Alberta Departments included in the Provincial Government Science Survey - Concluded

1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89e
Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority	Oil Sands Technology & Research Authority
Recreation & Parks	Recreation & Parks	Recreation & Parks	Recreation & Parks	Recreation & Parks	Recreation & Parks	Recreation & Parks	Recreation & Parks
Social Services & Community Health	Social Services & Community Health	Social Services & Community Health	Social Services & Community Health	Social Services & Community Health	Social Services	Social Services	Social Services
Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General	Solicitor General
					Technology, Research & Telecommunications	Technology, Research & Telecommunications	Technology, Research & Telecommunications
Tourism & Small Business	Tourism & Small Business	Tourism & Small Business	Tourism & Small Business	Tourism & Small Business	Tourism	Tourism	Tourism
Transportation	Transportation	Transportation	Transportation	Transportation & Utilities	Transportation & Utilities	Transportation & Utilities	Transportation & Utilities
Treasury	Treasury	Treasury	Treasury	Treasury	Treasury	Treasury	Treasury
Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation	Workers' Health, Safety & Compensation		

RESPONDENTS
1987-88

The following Departments are currently involved in scientific activities in the province of Alberta. The coordinator listed is the person responsible for the expenditures reported. We wish to thank the coordinators, as well as those who assisted in the amalgamation of data, for their time and efforts in providing us with these statistics.

Advanced Education — Coordinator: Asefa Gabregiorgis (422-4845)

Research and Information Support is responsible for the collection and analysis of data for the development of long range plans and policies in the area of advanced education. The other major activity is the operation of the Innovative Projects grant program to support the development and demonstration of innovative instructional techniques. R&D grants are awarded to Researchers in Alberta universities and health organizations through the Alberta Foundation for Nursing Research. Special Purpose Grants are awarded to private non-profit foundations and research institutes to examine various aspects of public policy.

Agriculture Research Trust — Coordinator: Laraine Strafford (432-4931)

The Trust, funded by the provincial government and industry, supported R&D projects in many aspects of agricultural and food sciences (including rural economy). Projects were carried out mainly in Alberta universities. The Trust completed its mandate in July, 1987.

Agriculture — Coordinator: Dr. Ralph G. Christian (422-1072)

The Department operates a number of research centres in Alberta, as well as supporting agriculture related research projects undertaken by universities and provincial research organizations.

Alcoholism and Drug Abuse Commission — Coordinator: David Hewitt (427-4275)

The Commission carries out or funds studies required for program evaluation, policy analysis and needs assessments.

Attorney General — Coordinator: D. Ian Hope (427-4997)

The Department makes an annual research grant to the Institute of Law Research and Reform at the University of Alberta.

Career Development and Employment — Coordinator: Joe Hammond (427-8501)

The Labour Market Information and Planning Division is responsible for the provision of a wide range of planning, research, policy analysis and evaluation services which assist the Department in the development and implementation of its policies, programs and services throughout the Province.

Community and Occupational Health — Coordinator: Brian Thomas (427-6971)

The Occupational Health and Safety Heritage Grant Program, which is administered by the Research and Epidemiology Branch of the Occupational Health and Safety Division, supports applied research projects and the development of innovative educational programs aimed at the reduction of work-related injuries and illnesses. Other branches involved with scientific activities include Mangement Support Services, Mental Health Services and Laboratory Services.

RESPONDENTS
1987-88

Consumer and Corporate Affairs — Coordinator: David Thompson (427-6941)

The Corporate Planning and Consumer Education Divisions conduct program evaluations, policy analysis and needs assessments in support of departmental programs.

Culture — Coordinator: Mark Rasmussen (427-3182)

The social science activities were reported as a composite of Historic Site Service, Archaeological Survey, Provincial Archives, Reynolds-Alberta Museum, Historical Resources Division and Library. The natural sciences were reported by the Natural History Sector of the Provincial Museum and the Tyrell Museum of Palaeontology.

Economic Development and Trade — Coordinator: Terry Eliuk (427-0675)

Eight branches are involved in related scientific activities: Commissioner General for Trade and Tourism, Finance and Administration, Futures Compendium, Industry Development, Trade Development, Strategic Planning, Transportation Services and Small Business Development. The activities undertaken and funded were special services and studies and statistical studies to provide information for economic planning and policy formation.

Education — Coordinator: Mr. Gary Zatko (427-2991)

The Planning and Policy Secretariat is involved chiefly with issue-oriented research of a cross-sectional nature as well as studies and surveys.

ACCESS Educational Communications Corporation — Coordinator: Dr. M. Plumb (451-7272)

The Planning, Marketing and Program Research Branch carries out or funds related scientific activities.

Energy — Coordinator: Mr. R.D. McDonald (427-8042)

The Scientific and Engineering Services and Research Division supports a large volume of R&D activity, funded mainly through the Alberta/Canada Energy Resources Research Fund. Projects relate to furthering the development and use of energy resources with emphasis on coal, renewables and energy conservation.

Environment — Coordinator: Sharon Quinn (632-6761)

Most of the activity is in the Natural Sciences with ten programs reporting: Research Management, Planning, Environmental Assessment, Earth Sciences, Reclamation Research Technical Advisory Committee, Operations, Pollution Control, Air Quality Control, Water Quality Control, and the Survey Branch. A small amount of activity in the social sciences is reported by the Planning and Environmental Assessment divisions. A recent reorganization of the Department has resulted in an incomplete picture of purposed science activities for 1988-89.

Alberta Environmental Centre — Coordinator: Dr. R.S. Weaver (632-6761)

The Centre is an inter-disciplinary research and service agency which studies and solves environmental problems identified by departments and agencies of the Government of Alberta.

RESPONDENTS - Continued

Environment Council of Alberta Coordinator: Mr. A. Giacomazzi (427-5792)

The Council offers support through library services and panels. It prepares reports and recommendations and provides information for various public hearings and policy formulating projects.

Forestry, Lands and Wildlife Coordinator: Mr. N. Brownlee (962-8700)

Scientific expenditures were reported by five divisions: Alberta Forest Service, Fish and Wildlife Division, Public Lands Division, Forest Industry and Development Division and the Alberta Land Information Services Division.

Alberta Heritage Foundation for Medical Research Coordinator: A.J. Nykolyn (423-5727)

The Foundation, supported by an endowment fund, supports medical research based in Alberta.

Hospitals and Medical Care Coordinator: Dr. Y.M. Cheung (427-1420)

The Heritage Trust fund supports cancer research performed by hospitals and health organizations and universities. Prior to 1987-88, grants for Applied Heart Disease Research had been administered by this department. These funds are now included in the global budgets of the respective hospitals. For this reason there has been a significant decrease in extramural payments for science activities in the natural sciences.

The social science activities, funded from the departmental budget, include health care programs, hospital planning and related studies. The branches reporting scientific activities include Health Economics and Statistics Branch, Hospital Services Branch, Systems Consulting Services Branch, and Research and Strategic Planning Branch.

Labour Coordinator: Janet E. Howell (427-8531)

Wages and benefits as well as other labour information is studied and analyzed. The results are made available for policy planning as well as the development of safety standards.

Alberta Mental Health Research Fund Coordinator: Dr. R.J. Dyck (427-2813)

The Fund awards grants and contributions to Universities for health related research and development in both natural and social sciences.

Municipal Affairs Coordinator: Linden Holmen (427-8150)

The Research and Development Branch manages the Innovative Housing Grant Program (I.H.G.P.) which provides grants to industry, institutions and individuals to carry out research pertaining to housing.

Alberta Oil Sands Technology and Research Authority Coordinator: Mr. W.G. Kowaluk (427-7623)

Alberta Heritage Trust is the primary source of funds for AOSTRA which awards numerous contracts for research and development. The industrial sector receives the majority of the money with universities and the Alberta Research Council getting the remainder.

RESPONDENTS - Concluded

Recreation and Parks Coordinator: Mike Boyd (422-1730)

The major objective reported by this Department for both the natural and social sciences is development in the area of culture, sport and recreation.

Social Services Coordinator: Barbara Peterson (441-6752)

The projects mainly include systematic investigations in order to provide information for planning and policy formulation on human resources, child welfare and services to the handicapped.

Solicitor General Coordinator: Joe Wong (427-0734)

The Computer and Research Services Branch develops information systems and conducts research in criminal justice.

Technology, Research and Telecommunications Coordinator: Jan Speirs (422-0561)

The department provides financial assistance in support of research and development (R&D) to the university and industrial sectors. It is the main source of provincial funding for the Alberta Research Council. Other activities include the transfer and commercialization of new technology.

Tourism Coordinator: Janice Friesen (427-4837)

The projects involve evaluations, studies and surveys on tourism. These related scientific activities are carried out by both departmental personnel as well as those working in the industrial sector.

Transportation & Utilities Coordinator: Alan Mah (422-2750)

Most of the activity is in natural sciences with eight programs reporting. These include Research and Development, Materials Engineering Branch, Bridge Engineering Branch, Business and Statistical Analysis Branch, Corporate Planning Services, Roadway Planning Branch and Regional Transportation Services. Only Urban Tansportation Branch reports some related scientific activites in the social sciences. This is due to the technical and engineering aspects of the work relating to transportation.

Alberta Treasury Coordinator: G. Jones (427-3058)

The Alberta Bureau of Statistics collects, compiles, analyses, abstracts and publishes statistical information relative to the commercial, industrial, financial, social, economic and general activities and conditions of the province.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

1. Economic Indicators

Province	Population January/88(1)		Provincial Gross Domestic Product per capita 1986(1)		Gross Domestic Expenditures on Research and development, 1986		Provincial GERD/PGDP 1986-87(2)	
	(000)	Rank	($)	Rank	($'000,000)	Rank	($)	Rank
Newfoundland	567	9	11,965	9	59	9	0.9	8
Prince Edward Island	128	10	11,484	10	25	10	1.7	2
Nova Scotia	881	7	14,277	7	174	6	1.4	3
New Brunswick	712	8	13,810	8	82	8	0.8	10
Quebec	6,619	2	18,045	4	1,497	2	1.3	4
Ontario	9,373	1	21,808	2	3,879	1	1.9	1
Manitoba	1,081	5	17,667	5	202	5	1.1	5
Saskatchewan	1,011	6	17,008	6	157	7	0.9	7
Alberta	2,385	4	24,431	1	601	3	1.0	6
British Columbia	2,961	3	19,080	3	506	4	0.9	9
Canada(3)	25,796		19,686		7,185		1.4	

(1) Canadian Economic Observer, Statistics Canada, Catalogue No. 11-010, August 1988.
(2) Estimates of Canadian Research and Development Expenditures, by Region, 1979 to 1986, Science, Technology and Capital Stock Division, Statistics Canada, ST-88-04.
(3) Includes the Yukon and Northwest Territories.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

2. Higher Education

Province	Total research and development expenditures in the higher education sector, 1986-87(1)		Sponsored research in universities, 1986-87(2)	
	($'000,000)	Rank	($'000,000)	Rank
Newfoundland	31	8	15	8
Prince Edward Island	5	10	1	10
Nova Scotia	56	6	30	7
New Brunswick	26	9	13	9
Quebec	357	2	233	2
Ontario	667	1	370	1
Manitoba	79	5	38	5
Saskatchewan	63	7	34	6
Alberta	239	3	105	3
British Columbia	127	4	80	4
Canada	1,638			

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(1) Estimation of Research and Development Expenditures in the Higher Education Sector, 1986-87, July, 1988, Science, Technology and Capital Stock Division, Statistics Canada, ST-88-02.
(2) Financial Statistics of Universities and Colleges, 1986-87, Canadian Association of University Business Officers.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

3. Industry

Province	Value added by manufacturing activity per capita, 1985(1)		Current intramural industrial R&D expenditures per employee in primary and secondary industry, 1986(2)	
	($)	Rank	($)	Rank
Newfoundland	945	9	18	10
Prince Edward Island	735	10	235	5
Nova Scotia	1,688	7	129	8
New Brunswick	1,745	6	60	9
Quebec	3,727	2	789	2
Ontario	5,483	1	1,256	1
Manitoba	2,161	5	170	7
Saskatchewan	1,007	8	198	6
Alberta	2,242	4	439	4
British Columbia	2,612	3	506	3
Canada(3)	3,717		823	

(1) **Manufacturing Industries of Canada; National and Provincial Areas, 1985**, Statistics Canada, Catalogue No. 31-203.
(2) Results of 1986 Industrial R&D survey, Science, Technology and Capital Stock Division, Statistics Canada and **The Labour Force, July, 1988**, Statistics Canada, Catalogue No. 71-001.
(3) Includes the Yukon and Northwest Territories.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

4. Federal Government

Province	Total intramural expenditures on scientific activities 1986-87(1)	Total Federal scientific personnel 1986-87(1)	Total extramural payments on scientific activities 1986-87(1)
	($'000,000)	(Person-years)	($'000,000)
Newfoundland	50	586	16
Prince Edward Island	9	142	7
Nova Scotia	118	1,728	40
New Brunswick	32	509	34
Quebec(2)	229	2,443	339
Ontario(3)	351	4,751	393
Ottawa-Hull	1,258	17,158	116
Manitoba	111	1,818	40
Saskatchewan	48	684	33
Alberta	101	1,495	65
British Columbia	148	1,798	133
Canada(4)	2,478	33,272	1,217

(1) Federal Government Science Expenditures by Region, 1986-87, Science, Technology and Capital Stock Division, Statistics Canada, July 1988.
(2) Excluding Hull.
(3) Excluding Ottawa.
(4) Includes the Yukon and Northwest Territories.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

5. Provincial

Province	Total provincial expenditures on scientific activities, 1986-87(1)		Total scientific expenditures of Provincial Research Organizations, 1987(2)	
	($'000)	Rank	($'000)	Rank
Newfoundland	25,321	6	...	...
Nova Scotia	...	...	6,763	7
New Brunswick	19,752	7	8,837	6
Quebec	...	...	28,563	2
Ontario	347,088	1	26,024	3
Manitoba	44,907	5	5,477	8
Saskatchewan	64,949	4	16,355	4
Alberta	329,358	2	43,476	1
British Columbia	92,713	3	8,569	5
Total	141,064			

(1) "Scientific and Technological Activities of Provincial Governments, 1979-80 to 1987-88", Science, Technology and Capital Stock Division, Statistics Canada, July 1988, ST-88-07.
(2) Science, Technology and Capital Stock Division, Statistics Canada.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

6. Gross Domestic Expenditures on R&D in Canada, by Performing Sector, by Province, 1986(1)

Province	Federal government	Provincial government	Provincial research organization	Total government	Industry	University	Private non-profit	All sectors
	($'000,000)							
Newfoundland	25	-	-	25	4	30	-	59
Prince Edward Island	9	-	-	9	11	5	-	25
Nova Scotia	87	1	3	91	27	55	1	174
New Brunswick	25	3	3	31	25	25	1	82
Quebec	175	43	16	234	872	357	34	1,497
Ontario	789	55	11	855	2,311	667	46	3,879
Manitoba	86	3	2	91	30	79	2	202
Saskatchewan	41	4	5	50	54	53	-	157
Alberta	75	23	26	124	238	239	-	601
British Columbia	104	15	2	121	254	127	4	506
Canada(2)	1,417	147	68	1,632	3,828	1,637	88	7,185

(1) "Estimates of Canadian R&D Expenditures, by Region 1979 to 1986", Science, Technology and Capital Stock Division, Statistics Canada.
(2) Includes the Yukon and Northwest Territories.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

7. Gross Domestic Expenditures on R&D in Canada, by Funding Sector, by Province, 1986(1)

Province	Federal government	Provincial government	Provincial research organization	Total government	Industry	University	Private non-profit	All sectors (3)
	($'000,000)							
Newfoundland	37	-	-	37	4	16	2	59
Prince Edward Island	14	1	-	15	4	4	-	25
Nova Scotia	124	3	-	127	14	24	4	174
New Brunswick	51	5	-	56	10	12	1	82
Quebec	437	152	-	589	632	111	45	1,497
Ontario	1,203	140	-	1,343	1,837	298	84	3,879
Manitoba	113	8	1	122	24	40	10	202
Saskatchewan	65	21	-	86	42	17	5	157
Alberta	131	108	1	240	182	134	13	601
British Columbia	208	26	-	234	173	47	16	506
Canada(2)	2,384	464	2	2,850	2,924	703	180	7,185

(1) "Estimates of Canadian R&D Expenditures, by Region, 1979 to 1986 (revised)", Science, Technology and Capital Stock Division, Statistics Canada.
(2) Includes the Yukon and Northwest Territories.
(3) Includes Foreign sources of funds.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

8. Gross Domestic Expenditures on R&D in Alberta, 1986(1)

Funding sector	Performing sector							
	Government				Business enterprise	Higher education	Private non-profit	Total
	Federal	Provincial	ARC	Total				
	($'000,000)							
Government								
Federal	75	-	1	76	11	44	-	131
Provincial	-	23	22	45	18	45	-	108
ARC	-	-	1	1	-	-	-	1
Sub-total	75	23	24	122	29	89	-	240
Business enterprise	-	-	2	2	177	3	-	182
Higher education	-	-	-	-	-	134	-	134
Private non-profit	-	-	-	-	-	13	-	13
Foreign	-	-	-	-	32	-	-	32
Total	75	23	26	124	238	239	-	601

(1) Beginning in 1985 the GERD includes R&D expenditures in both the Natural Sciences and Engineering and the Social Sciences and Humanities.

Source: "Estimates of Canadian Research and Development Expenditures by Region, 1979 to 1985", Science, Technology and Capital Stock Division, Statistics Canada.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

9. Federal Government Grants and Contracts to Industry for R&D in the Natural Sciences, by Selected Department/Program and Region, 1986-87

Department/Program	NFLD	PEI	NS	NB	QUE	ONT	NCR	MAN	SASK	ALTA	BC	CANADA(1)
	($'000,000)											
A. R&D Grants:												
Regional Industrial Expansion:												
Industrial and Regional Development Program	0.1	0.1	1.1	1.6	17.7	18.1	1.1	1.0	0.5	1.9	6.9	50.3
Defence Industry Productivity Program	-	-	0.6	0.1	93.5	33.8	3.3	1.0	0.2	1.3	7.7	141.5
Other	0.6	-	1.4	--	6.6	0.1	0.1	--	1.5	--	0.1	10.5
Sub-total	0.7	0.1	3.1	1.7	117.8	52.0	4.5	2.0	2.2	3.3	14.7	202.3
National Research Council:												
Industrial Research Assistance Program	0.9	0.7	1.1	1.4	6.2	11.3	1.0	1.2	1.1	2.7	3.6	31.2
Program for Industry/Laboratory Projects	--	0.3	0.7	--	3.4	10.2	4.8	0.2	0.2	0.7	2.6	23.2
Other	0.3	-	--	-	6.4	2.7	0.9	0.1	-	-	0.1	10.6
Sub-total	1.2	1.0	1.8	1.4	16.0	24.2	6.8	1.5	1.3	3.4	6.3	65.0
Other	-	3.1	1.8	12.4	19.6	4.0	5.6	0.5	--	0.2	0.9	48.1
Total	**1.9**	**4.2**	**6.7**	**15.5**	**153.5**	**80.2**	**16.9**	**4.0**	**3.5**	**6.9**	**21.9**	**315.4**
B. R&D Contracts:												
National Defence	0.1	-	3.7	0.3	8.1	21.3	32.6	4.2	0.1	2.4	3.8	76.6
National Research Council	0.2	--	0.1	-	0.5	10.3	8.7	0.5	3.3	--	--	23.6
Supply and Services	0.3	-	1.1	--	0.5	3.6	2.1	-	0.2	0.6	4.9	13.3
Other	0.8	0.2	3.1	1.2	5.4	25.8	10.7	2.9	1.1	4.1	5.7	61.1
Total	**1.4**	**0.2**	**8.0**	**1.5**	**14.5**	**61.0**	**54.1**	**7.6**	**4.7**	**7.1**	**14.4**	**174.6**
Total, grants and contracts	**3.3**	**4.4**	**14.8**	**17.0**	**168.0**	**141.2**	**71.0**	**11.6**	**8.2**	**14.0**	**36.3**	**498.0**

(1) Includes Yukon and Northwest Territories.
The data expressed here are regional representations and will not correspond to Canada aggregates shown in other Statistics Canada publications. Total may not add due to rounding.

Source: "Federal Government Science Expenditures by Region, 1981-82 to 1986-87", Science, Technology and Capital Stock Division, Statistics Canada, July 1988.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

10. Federal Government Expenditures on Activities in the Natural Sciences, by Region and Selected Departments, 1986-87

Region	Agriculture	Energy, Mines and Resources	Environment	Fisheries and Oceans	Regional Industrial Expansion	National Research Council	Natural Sciences and Engineering Research Council	Other	Total
	($'000,000)								
Newfoundland	5	2	6	22	1	10	6	5	57
Prince Edward Island	7	4	1	-	-	1	-	3	16
Nova Scotia	10	17	11	61	3	10	10	26	148
New Brunswick	18	14	6	7	5	2	6	2	60
Quebec (excludes NCR)	42	36	42	31	119	51	63	142	526
National Capital Region (NCR)	87	195	15	11	5	240	13	266	832
Ontario (exludes NCR)	49	18	149	13	58	41	123	237	688
Manitoba	22	2	16	8	3	17	8	56	132
Saskatchewan	24	6	11	-	2	16	10	8	77
Alberta	39	24	23	-	3	5	27	34	155
British Columbia	35	12	26	52	15	42	37	40	259
Canada (1).....	338	336	321	205	214	435	303	822	2,974

(1) Includes Yukon and Northwest Territories.
Source: "Federal Government Science Expenditures by Region, 1981-82 to 1986-87", Science, Technology and Capital Stock Division, Statistics Canada, July 1988.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

11. Federal Government Intramural Expenditures on Activities in the Natural Sciences, by Region and Selected Departments, 1986-87

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	($'000,000)								
Newfoundland	5	-	-	6	22	-	7	2	42
Prince Edward Island	7	-	-	1	-	-	-	1	9
Nova Scotia	9	-	12	10	58	13	7	1	110
New Brunswick	17	-	-	6	7	-	-	-	30
Quebec (excludes NCR)	39	-	8	42	30	42	32	15	208
National Capital Region (NCR)	82	-	186	14	10	22	224	193	731
Ontario (exludes NCR)	45	91	2	145	12	26	4	5	330
Manitoba	20	49	-	14	8	-	6	1	98
Saskatchewan	22	-	3	11	-	-	10	1	47
Alberta	38	-	21	22	-	13	-	-	94
British Columbia	33	-	8	25	50	10	9	1	136
Canada (1).....	317	140	246	311	197	126	299	221	1,857

(1) Includes Yukon and Northwest Territories.
Source: "Federal Government Science Expenditures by Region, 1981-82 to 1986-87", Science, Technology and Capital Stock Division, Statistics Canada, July 1988.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

12. Federal Government Intramural Expenditures on R&D in the Natural Sciences, by Region and Selected Departments, 1986-87

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	($'000,000)								
Newfoundland	5	-	-	-	10	-	6	1	22
Prince Edward Island	7	-	-	-	-	-	-	1	8
Nova Scotia	9	-	11	1	38	13	7	-	79
New Brunswick	16	-	-	2	4	-	-	1	23
Quebec (excludes NCR)	38	-	6	3	17	42	28	13	147
National Capital Region (NCR)	68	-	114	1	1	21	189	90	484
Ontario (exludes NCR)	42	85	1	31	3	26	2	3	193
Manitoba	17	46	-	1	8	-	5	1	78
Saskatchewan	21	-	1	6	-	-	9	-	37
Alberta	34	-	18	2	-	13	-	1	68
British Columbia	30	-	8	1	37	10	7	1	94
Canada (1).....	287	131	159	48	118	125	253	113	1,234

(1) Includes Yukon and Northwest Territories.
Source: "Federal Government Science Expenditures by Region, 1981-82 to 1986-87", Science, Technology and Capital Stock Division, Statistics Canada, July 1988.

INDICATORS OF PROVINCIAL SCIENTIFIC ACTIVITIES

13. Federal Government Personnel Engaged in Activities in the Natural Sciences, by Region and Selected Departments, 1986-87

Region	Agriculture	Atomic Energy of Canada Ltd	Energy, Mines and Resources	Environment	Fisheries and Oceans	National Defence	National Research Council	Other	Total
	(person-years)								
Newfoundland	96	-	-	67	219	-	60	11	453
Prince Edward Island	110	-	-	11	7	-	1	3	132
Nova Scotia	149	-	141	225	792	210	89	8	1,614
New Brunswick	290	-	1	90	91	-	3	5	480
Quebec (excludes NCR)	509	-	1	530	142	579	214	152	2,127
National Capital Region (NCR)	1,377	-	2,087	88	157	269	2,645	2,810(1)	9,433
Ontario (exludes NCR)	726	1,692	28	1,284	180	456	27	54	4,447
Manitoba	359	911	1	234	123	-	9	11	1,648
Saskatchewan	372	-	6	179	-	-	110	4	671
Alberta	581	-	212	419	-	183	2	4	1,401
British Columbia	411	-	75	353	528	136	96	10	1,609
Canada (2).....	4,980	2,603	2,873	3,593	2,239	1,833	3,256	3,093	24,170

(1) Includes 1,108 person-years for Health and Welfare Canada, 322 person-years for the Department of Communications and 367 person-years for National Museums of Canada.
(2) Includes Yukon and Northwest Territories.
Source: "Federal Government Science Expenditures by Region, 1981-82 to 1986-87", Science, Technology and Capital Stock Division, Statistics Canada, July 1988.

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Federal Government Science Expenditures by Region, 1981-82 to 1986-87